STATE OF WASHINGTON

DATA SUMMARY & ANALYSIS

OF

1986 TRAFFIC COLLISIONS

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PART II

OVERALL STATEWIDE PROBLEM ANALYSIS

II—OVERALL STATEWIDE PROBLEM ANALYSIS

List Of Statistical Tables And Charts

Statewide Summary **Page**

Overview and Exposure Rates . . . . . II- 1
Fatalities by Status . . . . . II- 2
Traffic Deaths, Travel, Death Rate, Reported Collisions & Injuries, Multiple, Single Collisions . . . . . II- 4
Vehicle-Pedestrian, & Vehicle Pedalcycle Collisions . . II- 5
Traffic Deaths and Death Rates by County . . . . . II- 5
Highways Travel and Traffic Fatalities - 1986 . . . . . II- 6
Traffic Fatalities in 1986 and Percent Change from 1985 II- 6
Traffic Fatalities by Age and Sex 1986 . . . . . II- 7
Persons Killed & Injured by Age by Status . . . . . II- 7
Comparison of Traffic Deaths by Month . . . . . II- 8
Collisions by Time . . . . . II- 8
Collision Rates by County Population . . . . . II- 9

Explanation Of Problem Analysis Process II-11

Impact Problems

Alcohol Involvement II-14
Youth Involvement II-26
Safety Restraint Usage II-31
Motorcycle Collisions II-40
Pedalcycle II-46
Pedestrians II-50
Heavy Trucks II-55
Pupil Transportation II-59
Contributing Driver Violations II-60
Vehicle Defects II-61
Senior Driver Involvement II-62

PART II

OVERALL STATEWIDE PROBLEM ANALYSIS

STATEWIDE SUMMARY

Overview

The number of persons killed on the state's highways in 1986 totalled 714, a 3.6% decrease from the 1983-1985 three-year baseline average of 741. There was a 0.2% drop in the total number of fatal collisions for 1986 compared to the average for 1983-1985. Increases for 1986 over the three-year baseline period were recorded in the categories of total collisions, injury collisions, total number of persons injured and property damage only collisions (Table 1-1).

Table 1-1

SEVERITY OF COLLISIONS
Four Year Comparison

Impact	Years				Previous 3 Year Average (83-85)	% of Change 86 - 3 Year Average
	1986	1985	1984	1983		
Total Collisions	122,918	120,056	111,655	106,597	112,769	9.0%
Fatal Collisions	658	656	687	635	659	-0.2%
Total Killed	714	756	761	705	741	-3.6%
Injury Collisions	46,090	44,373	42,076	40,273	42,241	9.1%
Total Injured	66,707	63,806	61,366	58,317	61,163	9.1%
Property Damage Only Collisions	76,170	75,027	68,892	65,689	69,869	9.0%

Exposure

A 9.7% increase in motor vehicle miles travelled was recorded for 1986 over the 1983-1985 baseline period. Motor vehicle registration jumped by 5.5% over baseline while the number of licensed drivers was up 3.0%. In 1986 the state's population increased over the 1983-85 average by 2.0% to a total of 4,419,700 persons (Table 1-2).

Table 1-2

VEHICLES AND DRIVERS
Four Year Comparison

Exposure	Years				Previous 3 Year Average (83-85)	% of Change 86 - 3 Year Average
	1986	1985	1984	1983		
Motor Vehicle Travel* **	36,416	33,980	33,344	32,275	33,200	9.7%
Motor Vehicle Registration	3,651,102	3,546,152	3,459,772	3,372,966	3,459,630	5.5%
Licensed Drivers	3,029,375	2,980,717	2,973,468	2,867,032	2,940,406	3.0%
State's Population	4,419,700	4,384,100	4,328,100	4,285,100	4,332,433	2.0%

*In Millions
**Preliminary Estimate for 1986

Rates

The 1986 motor vehicle traffic death rate dropped to an all time low of 1.96 deaths per 100 million vehicle miles of travel, down from the 2.22 rate recorded in 1985. The rate of 1.83 injuries per one million vehicle miles in 1986 was down slightly from the 1.88 rate for 1986 and down from the 1.84 rate recorded for the baseline period (Table 1-3).

Table 1-3

DEATH AND INJURY RATES
Four Year Comparison

Rates	Years				Previous 3 Year Average (83-85)	% of Change 86 - 3 Year Average
	1986	1985	1984	1983		
Death Rate (Deaths per 100M vehicle miles)	1.96	2.22	2.28	2.18	2.23	-12.1%
Injury Rate (Injury per 1M vehicle miles)	1.83	1.88	1.84	1.81	1.84	-0.5%

Fatalities By Status

Driver continued in 1986 as the most common status of those killed as a result of motor vehicle collisions. Fatalities in this classification, however, decreased from 362 in 1985 to 353 in 1986. The 1986 figure decreased 3.5% from the average of the three previous years. The number of passengers killed decreased by a greater number in 1986 when 175 persons were killed, a decrease of 36 from the 1985 total. The 175 total was also down from the 194 average for the baseline period. The number of motorcycle drivers fatally injured in collisions decreased from 75 in 1985 to 71 the following year. Last year's total was up one from the three year baseline (Table 1-4).

Table 1-4

PERSONS KILLED BY STATUS
Four Year Comparison

Status	Years				Previous 3 Year Average (83-85)	% of Change 86 - 3 Year Average
	1986	1985	1984	1983		
Drivers (no motorcyclists)	353	362	392	343	366	-3.5%
Passengers	175	211	189	182	194	-9.8%
Pedestrians	94	89	97	89	92	2.5%
Bicyclists	12	12	11	14	12	-2.7%
Motorcycle Drivers	71	75	62	72	70	1.9%
Motorcycle Passengers	9	7	10	5	7	22.7%
TOTAL	714	756	761	705	741	-3.6%

Traffic Collisions, Deaths, Injuries, Travel And Death Rates

The 714 traffic fatalities recorded in 1986 were the second lowest in Washington's recent history. The steady decline in the number of traffic fatalities that followed the state's 1979 high point of 1,034 reached bottom at 705 in 1983 but then ascended to 761 the following year (Figure 1-1). Motor vehicle travel in 1986 increased by 7.2% over 1985 to reach an all-time high of 36,416 billion miles (figure 1-2).

The state's 1986 traffic fatality rate of 1.96 deaths per 100 million vehicle miles of travel continued below the national rate of 2.57 for the year. The state rate thus dropped to the lowest point in Washington's history, exceeding the previous low of 2.18 recorded in 1983 (Figure 1-3). Total reported motor vehicle traffic collisions and injuries increased over 1985. Total collisions were up 2.4% while the number of persons injured rose by 3.9% (Figure 1-4).

Collisions By Type

A 5.0 % increase in multiple vehicle collisions over 1985 was recorded in 1986 (Figure 1-5). Single vehicle collisions were down 4.4% (Figure 1-6). Vehicle-pedestrian collisions increased 10.0% from 1985 (Figure 1-7). Vehicle-pedalcyclist collisions experienced a sharper increase of 13.7% in 1986. This is the second year in a row that a sharp increase in pedalcyclist collisions was recorded.

Traffic Deaths And Death Rates By County

In 1986 fatalities ranged from a high of 164 in King County, with a death rate of 1.4 (traffic deaths per 10,000 registered vehicles) to a low of zero deaths in Columbia, San Juan and Wahkiakum Counties. Ferry County recorded the highest death rate at 11.66, computed on four fatalities, followed by Adams County, which recorded an 8.7 death rate on 12 deaths. Pend Oreille recorded an 8.2 death rate on six deaths, and Lincoln recorded a rate of 8.1 based on nine traffic deaths (Figure 1-9).

Highways, Travel And Fatalities

The U.S. and State Numbered System (other than the Interstate System) was the most-traveled road system in the state, recording 11.518 billion miles, up from the 10,618 billion miles of 1985. The interstate system continued to have the lowest death rate of all the state systems, with a 0.66 rate recorded in 1986, down from the 0.94 rate recorded in 1985. Travel on city streets increased to 8.501 billion miles in 1986 and recorded a death rate of 1.52, up from 1.48 in 1985.

County roads were traveled 7.100 billion miles and recorded a death rate of 3.25 in 1986, a decline from the previous year's 3.33 rate. Total motor vehicle travel in the state increased from 33.980 billion miles to 36.416 billion (Table 1-5).

Figure 1-1

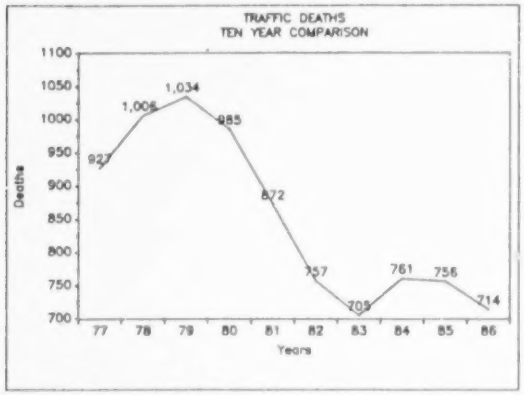


Figure 1-2

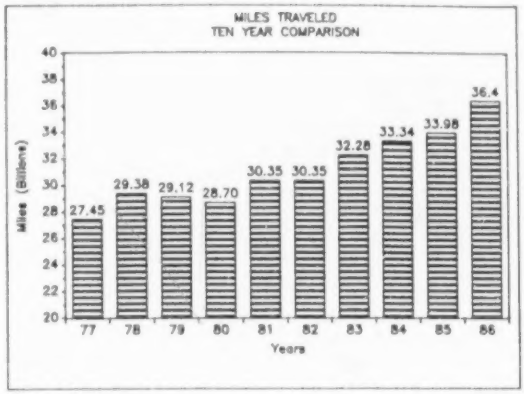


Figure 1-3

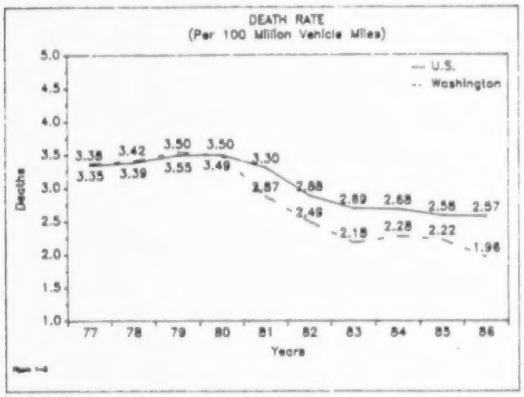


Figure 1-4

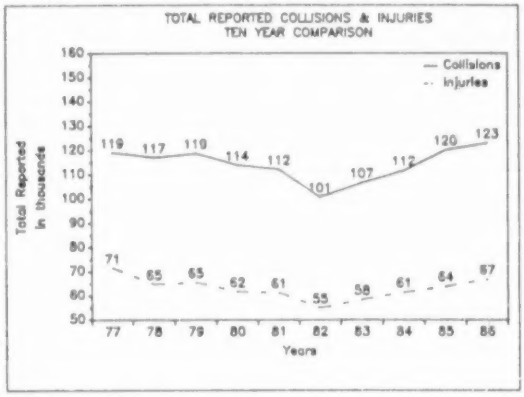


Figure 1-5

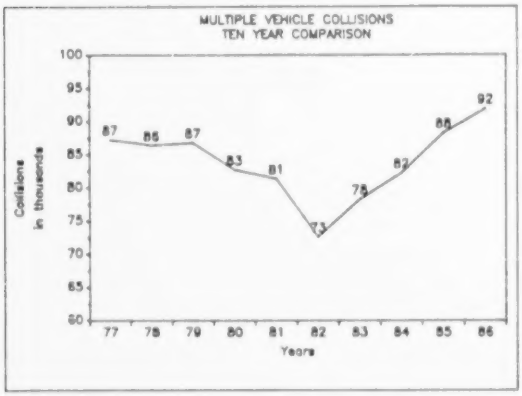


Figure 1-6

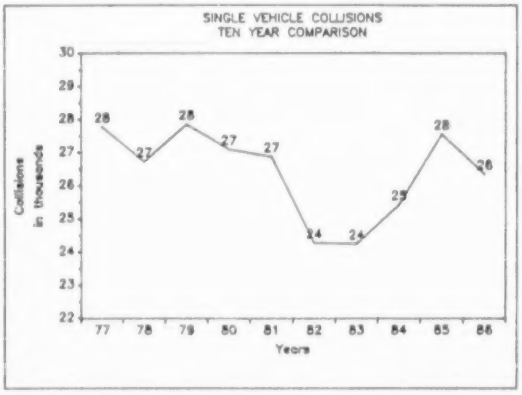


Figure 1-7

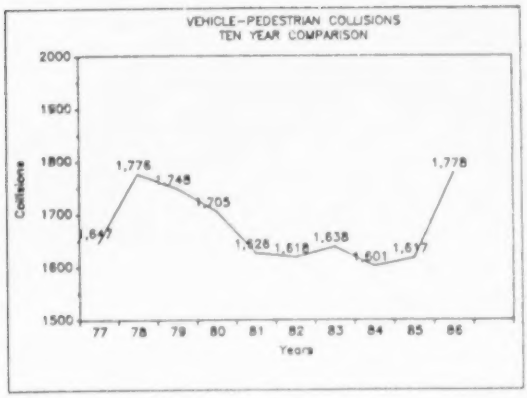


Figure 1-8

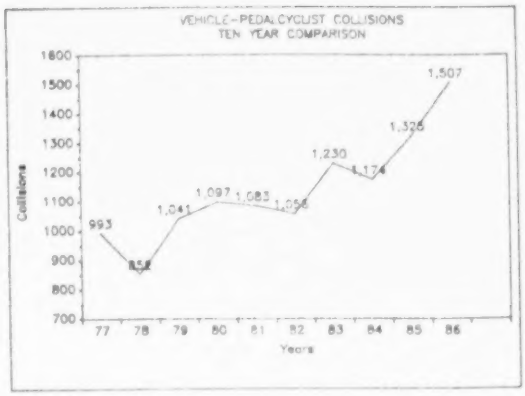


Figure 1-9

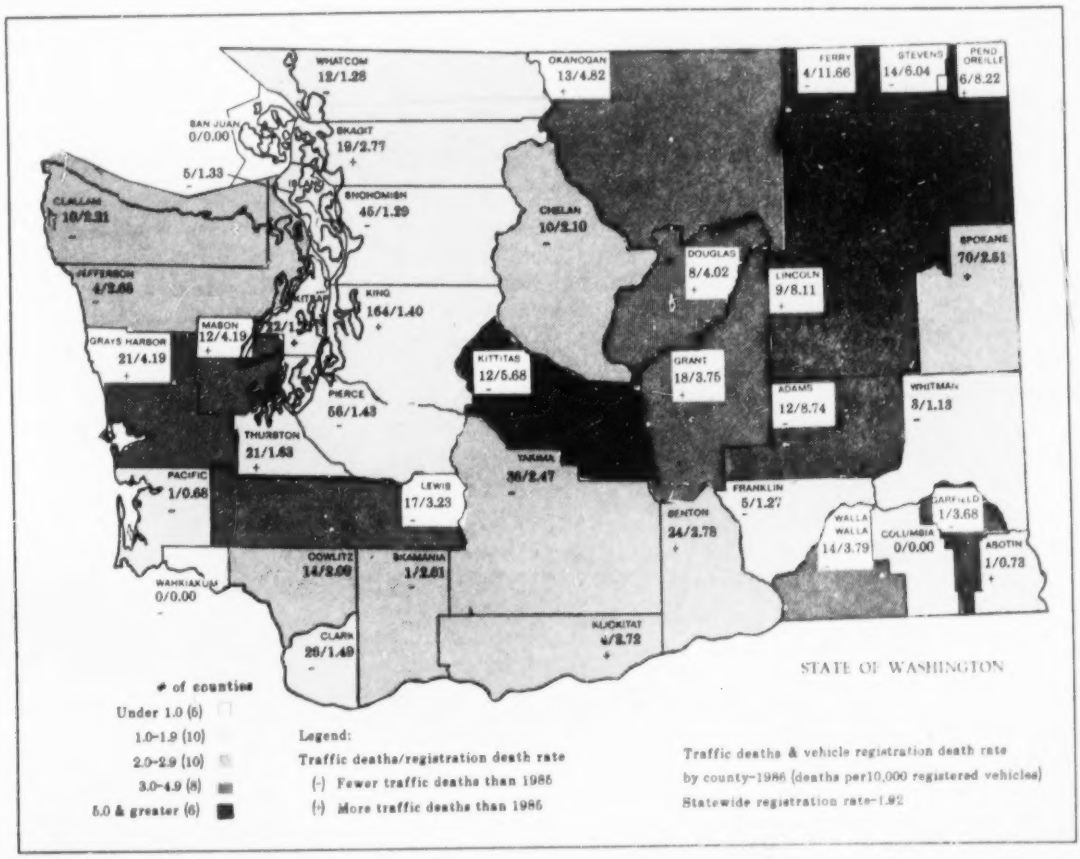


Table 1-5

HIGHWAYS, TRAVEL, AND ACCIDENTS
By Type of Highway

Type of Highways	Highways		Vehicle Miles Traveled+		Accidents		
	Miles	% of Total	Miles (Millions)	% of Total	Total Collisions	Total Fatalities	Death Rate for CMVM*
Interstate System**	761	0.94%	9,219	25.32%	10,606	61	0.66
All Other State Highways	6,212	7.66%	11,518	31.63%	26,553	283	2.46
County Roads	41,360	50.98%	7,100	19.50%	27,066	231	3.25
City Streets	11,200	13.80%	8,501	23.34%	57,937	129	1.52
All Other Traffic Ways***	21,600	26.62%	78	0.21%	756	10	12.82
TOTAL	81,133	100.00%	36,416	100.00%	122,918	714	1.96

+Preliminary Estimates
*Fatalities per hundred million vehicle miles, based on roadway travel as reported by the Dept. of Transportation.
**Does not include traveled way.
***Does not include (all terrain vehicle) trails.

Figure 1-10

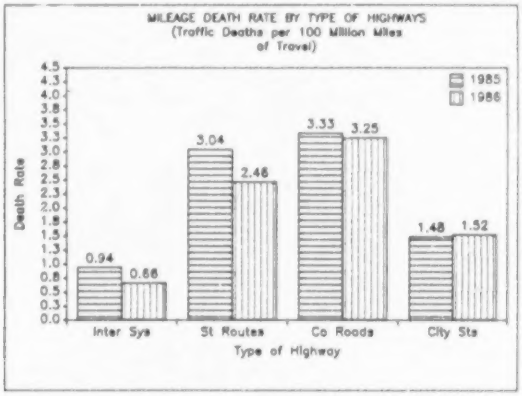


Figure 1-11

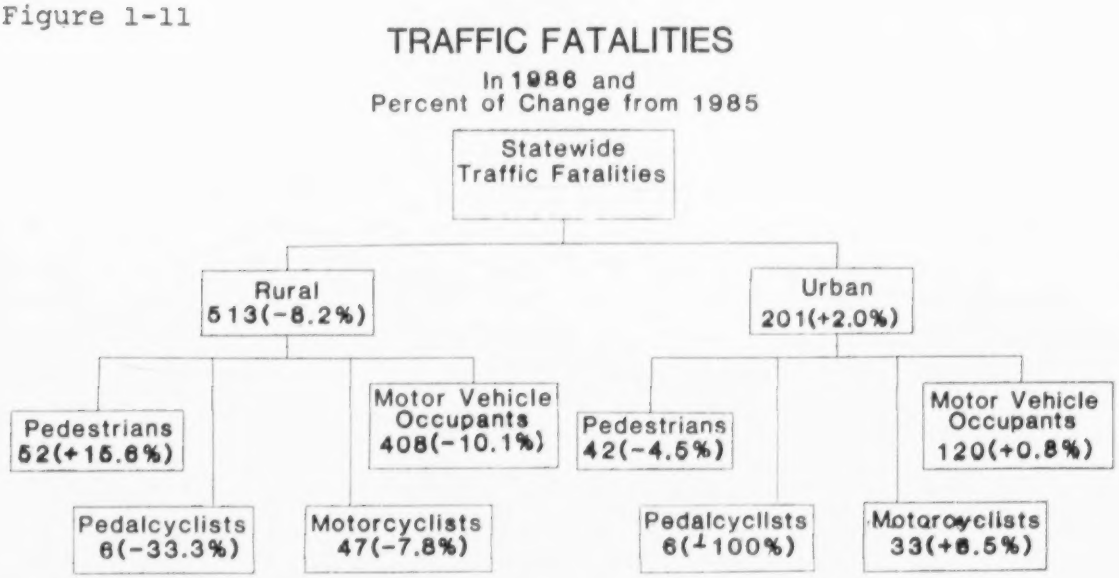


Figure 1-11 TRAFFIC FATALITIES by AGE and SEX

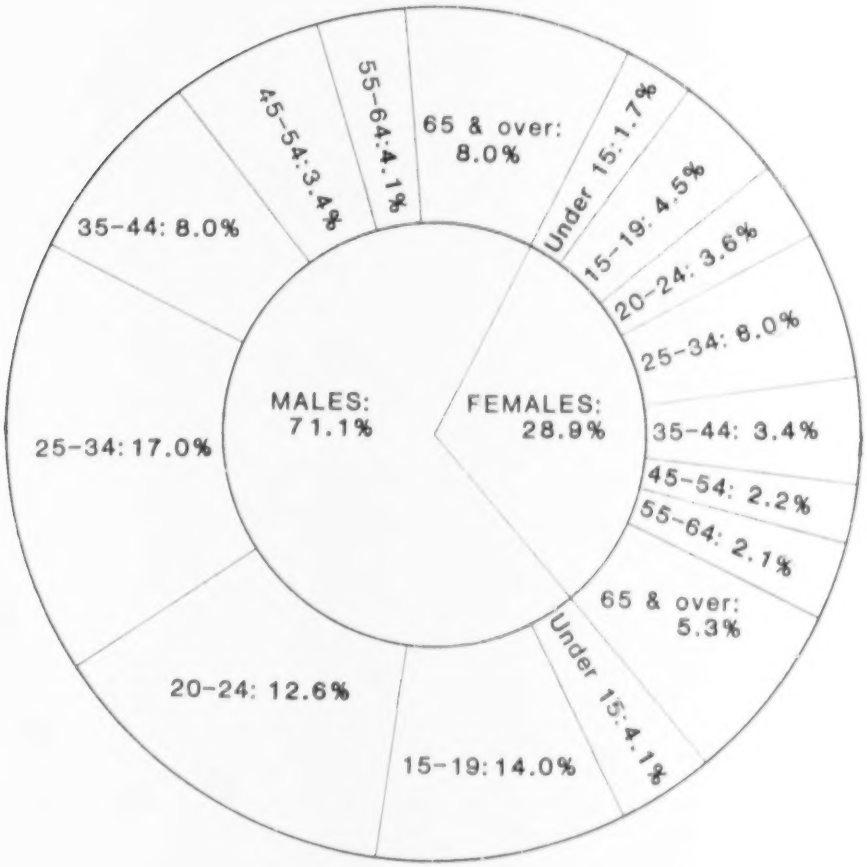


Table 1-6

PERSONS KILLED AND INJURED
By Age By Status

Age	Total		Occupants		Pedestrians		Pedalcyclists	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
0 - 4	7	1,136	3	1,039	2	78	2	19
5 - 9	14	1,755	8	1,252	4	234	2	267
10 - 14	20	2,138	14	1,492	3	202	3	444
15 - 19	132	11,934	120	11,414	11	219	1	297
20 - 24	116	11,302	108	10,962	7	162	1	176
25 - 34	164	15,482	148	14,993	13	311	3	170
35 - 44	81	9,326	67	9,075	14	191	0	56
45 - 54	40	4,622	33	4,484	7	119	0	18
55 - 64	44	3,443	34	3,349	10	80	0	12
65 - 74	43	2,246	35	2,166	8	73	0	7
75/Older	52	1,231	37	1,127	15	102	0	2
Not Stated	1	2,092	1	1,972	0	72	0	43
TOTAL*	714	66,707	608	63,325	94	1,843	12	1,511

*Total Injured includes 28 injured where the status of the injured was unknown

Table 1-7

COMPARISON OF TRAFFIC DEATHS BY MONTH
Three Year Comparison

Month	1986		1985		1984		% Change 86 to 85	
	Month Total	Year To Date	Month Total	Year To Date	Month Total	Year To Date	Month Total	Year To Date
January	42	42	43	43	48	48	-2.3%	-2.3%
February	28	70	48	91	41	89	-41.7%	-23.1%
March	56	126	52	143	56	145	7.7%	-11.9%
April	60	186	61	204	50	195	-1.6%	-8.8%
May	73	259	84	288	68	263	-13.1%	-10.1%
June	73	332	67	355	82	345	9.0%	-6.5%
July	70	402	87	442	83	428	-19.5%	-9.0%
August	69	471	63	505	75	503	9.5%	-6.7%
September	51	522	66	571	63	566	-22.7%	-8.6%
October	67	589	66	637	76	642	1.5%	-7.5%
November	64	653	56	693	72	714	14.3%	-5.8%
December	61	714	63	756	47	761	-3.2%	-5.6%

Table 1-8

COLLISIONS
By Time

Time Hour Reporting	Total			Monday - Thursday			Friday - Sunday		
	All	Injury	Fatal	All	Injury	Fatal	All	Injury	Fatal
Midnight	3,456	1,281	46	1,271	453	17	2,185	828	29
1:00	3,018	1,273	39	932	395	15	2,086	878	24
2:00	3,011	1,264	36	937	397	13	2,074	867	23
3:00	1,373	565	20	449	187	9	924	378	11
4:00	1,100	443	15	419	163	4	681	280	11
5:00	1,222	443	14	623	214	7	599	229	7
6:00	2,574	921	15	1,756	623	8	818	298	7
7:00	5,407	1,973	20	3,923	1,427	9	1,484	546	11
8:00	4,664	1,566	12	3,187	1,065	6	1,477	499	6
9:00	3,981	1,336	10	2,473	828	5	1,508	508	5
10:00	4,681	1,523	18	2,770	876	5	1,911	647	13
11:00	6,018	2,045	22	3,593	1,204	11	2,425	841	11
Noon	6,882	2,455	25	3,933	1,369	15	2,949	1,086	10
1:00	7,232	2,677	18	4,069	1,459	10	3,163	1,218	8
2:00	8,187	3,054	34	4,816	1,779	15	3,371	1,275	19
3:00	9,781	3,668	30	5,989	2,174	17	3,792	1,494	13
4:00	10,553	4,015	35	6,527	2,444	16	4,026	1,571	19
5:00	10,124	3,982	41	6,343	2,479	27	3,781	1,503	14
6:00	7,124	2,764	29	4,072	1,575	12	3,052	1,189	17
7:00	5,672	2,317	29	3,020	1,241	8	2,652	1,076	21
8:00	4,517	1,748	38	2,332	903	23	2,185	845	15
9:00	4,508	1,778	40	2,322	932	21	2,186	846	19
10:00	3,948	1,514	36	1,869	726	17	2,079	788	19
11:00	3,885	1,487	36	1,623	632	13	2,262	855	23
TOTAL	122,918	46,090	658	69,248	25,545	303	53,670	20,545	355

Table 1-10

COLLISION RATES BY CITY POPULATION*
1986

City	1986 Population	Traffic Deaths		Traffic Injuries		Total Collisions	
		Number	Rate**	Number	Rate***	Number	Rate**
250,000 and Over							
1. Seattle	488,200	48	9.83	9,392	19.24	19,572	40.09
100,000 to 250,000							
1. Spokane	172,700	20	11.58	3,553	20.57	6,727	38.95
2. Tacoma	158,900	13	8.18	3,534	22.24	6,143	38.66
50,000 to 100,000							
1. Bellevue	81,770	2	2.45	927	11.34	2,201	26.92
2. Everett	59,470	8	13.45	1,130	19.00	2,263	38.05
25,000 to 50,000							
1. Yakima	49,590	2	4.03	855	17.24	1,964	39.60
2. Bellingham	46,380	0	0.00	570	12.29	1,241	26.76
3. Vancouver	42,740	4	9.36	666	15.58	1,311	30.67
4. Kennewick	36,600	5	13.66	364	9.95	901	24.62
5. Renton	34,460	5	14.51	714	20.72	1,723	50.00
6. Bremerton	33,420	5	14.96	475	14.21	1,064	31.84
7. Richland	30,240	3	9.92	261	8.63	570	18.85
8. Auburn	29,950	8	26.71	433	14.46	868	28.98
9. Longview	29,370	3	10.21	415	14.13	817	27.82
10. Olympia	28,990	2	6.90	564	19.45	1,262	43.53
11. Redmond	28,811	2	6.94	417	14.47	869	30.16
12. Kent	28,620	8	27.95	908	31.73	1,465	51.19
13. Edmonds	28,060	0	0.00	298	10.62	584	20.81
14. Walla Walla	25,590	4	15.63	247	9.65	586	22.90
15,000 to 25,000							
1. Lynnwood	24,000	1	4.17	667	27.79	1,241	51.71
2. Pullman	22,530	0	0.00	105	4.66	300	13.32
3. Mercer Island	20,670	1	4.84	79	3.82	233	11.27
4. Kirkland	19,410	0	0.00	268	13.81	588	30.29
5. Puyallup	19,400	1	5.15	306	15.77	653	33.66
6. Pasco	18,420	2	10.86	331	17.97	733	39.79
7. Wenatchee	17,980	0	0.00	239	13.29	604	33.59
8. Port Angeles	17,300	0	0.00	206	11.91	488	28.21
9. Aberdeen	17,010	3	17.64	158	9.29	581	34.16
10. Mountlake Terrace	15,590	0	0.00	125	8.02	294	18.86
12. Lacey	15,270	0	0.00	188	12.25	447	27.77
10,000 to 15,000							
1. Mount Vernon	14,260	0	0.00	187	11.78	424	21.53
2. Des Moines	13,690	2	14.61	168	6.72	307	14.76
3. Oak Harbor	13,480	0	0.00	92	13.58	202	26.85
4. Centralia	11,800	1	8.47	183	5.17	362	18.22
5. Ellensburg	11,400	0	0.00	61	15.44	215	28.60
6. Kelso	10,760	1	9.29	176	13.66	326	30.02
7. Moses Lake	10,390	1	9.62	147	14.15	323	31.09
TOTAL	1,727,221	155	8.97	29,409	17.03	60,452	35.00

*Does not include collisions on limited access roads or freeways
**Frequency per 100,000 population
***Frequency per 1,000 population

Source:

WSP Summary of M.V. Accident Report

Table 1-9

COLLISION RATES BY COUNTY POPULATION
1986

County	1986 Population	Traffic Deaths		Traffic Injuries		Total Collisions	
		Number	Rate*	Number	Rate**	Number	Rate**
Over 1,000,000							
1. King	1,361,700	164	12.04	23,962	17.60	46,525	34.17
250,000 to 500,000							
1. Pierce	530,800	56	10.55	9,094	17.13	15,034	28.32
2. Snohomish	381,600	45	11.79	5,611	14.70	10,229	26.81
3. Spokane	355,900	70	19.67	5,860	16.47	10,258	28.82
100,000 to 250,000							
1. Clark	205,000	26	12.68	2,630	12.83	4,281	20.88
2. Yakima	183,600	36	19.61	2,327	12.67	4,530	24.67
3. Kitsap	164,500	22	13.37	1,890	11.49	3,344	20.33
4. Thurston	142,200	21	14.77	2,008	14.12	3,646	25.64
5. Whatcom	116,700	12	10.28	1,434	12.29	2,603	22.31
6. Benton	104,000	24	23.08	1,053	10.13	2,198	21.13
50,000 to 100,000							
1. Cowlitz	78,900	14	17.74	1,007	12.76	1,835	23.26
2. Skagit	69,000	19	27.54	1,038	15.04	1,865	27.03
3. Grays Harbor	63,000	21	33.33	871	13.83	1,714	27.21
4. Lewis	56,800	17	29.93	805	14.17	1,450	25.53
5. Clallam	52,900	10	18.90	548	10.36	1,201	22.70
25,000 to 50,000							
1. Island	50,600	5	9.88	412			
2. Grant	50,500	18	35.64	563	11.15	1,010	20.00
3. Chelan	48,900	10	20.45	669	13.68	1,383	28.28
4. Walla Walla	48,500	14	28.87	478	9.86	992	20.45
5. Whitman	39,500	3	7.59	374	9.47	714	18.08
6. Mason	35,400	12	33.90	441	12.46	735	20.76
7. Franklin	35,300	5	14.16	468	[illegible]	1,011	28.64
8. Okanogan	31,600	13	41.14	427	13.51	682	21.58
9. Stevens	30,200	14	46.36	240	7.95	465	15.40
10,000 to 25,000							
1. Kittitas	25,000	12	48.00	564	22.56	1,167	46.68
2. Douglas	23,300	8	34.33	271	11.63	472	20.26
3. Jefferson	17,900	4	22.35	252	14.08	417	23.30
4. Pacific	17,200	1	5.81	202	11.74	367	21.34
5. Asotin	17,000	1	5.88	121	7.12	250	14.71
6. Klickitat	16,600	4	24.10	184	11.08	319	19.22
7. Adams	13,900	12	86.33	230	16.55	359	25.83
Under 10,000							
1. Lincoln	9,700	9	92.78	137	14.12	189	19.48
2. Pend Oreille	9,000	6	66.67	113	12.56	221	24.56
3. San Juan	8,900	0	0.00	76	8.54	131	14.72
4. Skamania	7,800	1	12.82	122	15.64	182	23.33
5. Ferry	6,100	4	65.57	76	12.46	127	20.82
6. Columbia	4,100	0	0.00	55	13.41	90	21.95
7. Wahkiakum	3,600	0	0.00	50	13.89	90	25.00
8. Garfield	2,500	1	40.00	44	17.60	69	27.60
TOTAL	4,419,700	714	16.15	66,707	15.09	122,155	27.64

*Frequency per 100,000 population
**Frequency per 1,000 population

EXPLANATION OF PROBLEM ANALYSIS PROCESS

Explanation Of Problem Analysis Process

In developing the Problem Identification section for the 1988 Highway Safety Plan (HSP), problem areas were classified into two basic types: impact problems and system support problems.

Impact problems are those whose factors contribute directly to the occurrence of collisions, fatalities and/or injuries and may be corrected through the implementation of countermeasures designed to reduce the effects of these factors.

System support problems are those deficiencies within vital traffic safety programs whose correction may not be directly reflected in a reduction in traffic collisions, injuries or fatalities.

The basis for impact and system support problem identification, analysis and selection for inclusion into the HSP was done in two ways.

1. Impact problem areas were based on identifying statewide experience in impact areas where information was available) outlined in the Federal safety standards. Various statewide automated and manual traffic information systems were inventoried and analyzed. The data sources included: Traffic Accident Records, Fatal Accident Reporting System, Driver's Licensing Records, Vehicle Registration Records and Highway/Roadway Information. In most instances, four years' worth of data were gathered as a baseline to serve as a point of comparison to the current year's activity level.

2. The second source for problem identification inclusion in the HSP resulted from analysis by and for various state and local agencies with an interest in highway safety. The Washington Traffic Safety Commission made it known that the two main emphasis areas in FY 1988 were the non-use of occupant restraint systems, and alcohol-related collisions.

Data Analysis And Statistical Techniques

Data analysis was a key factor in the identification and selection of the traffic problem areas included in this Plan. The analyses were performed to ensure that the conclusions drawn from the data were valid and credible.

The most common data sources in the HSP were the statewide traffic collision records, which were used for identifying the specific traffic problem areas. Four continuous years (1982-1985) of collision experience were used to serve as a baseline in analyzing traffic collision data. This baseline was used to obtain a better perspective to assess the current

year's (1986) experience with traffic problem areas. The baseline also serves to negate short-term changes in collision patterns.

The development of over/under-representation ratios were the most frequently used methods of analysis. Where relevant exposure data were available, the generation of over-representation ratios allow for the comparisons of different subgroups relative to the percentage of the population they comprise. Additionally, county and city rankings were generated for different problem areas to compare geographical and political subdivisions.

ANALYSIS OF SELECTED TRAFFIC PROBLEMS

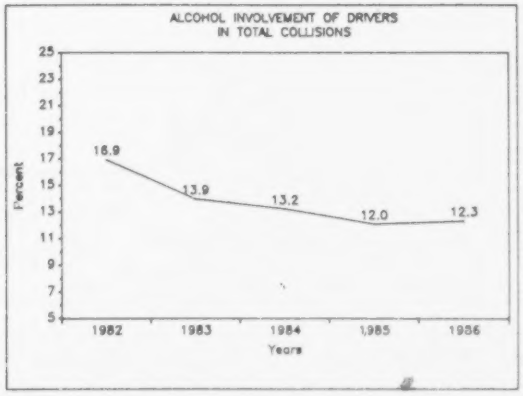
- Alcohol Involvement
- Youth Involvement
- Safety Restraint Usage
- Motorcycle Collisions
- Pedalcycles
- Pedestrians
- Heavy Trucks
- Pupil Transportation
- Contributory Driver Violations
- Vehicle Defects
- Senior Driver Involvement

ALCOHOL INVOLVEMENT

Overview

In 1986, 12.3% of all drivers involved in traffic collisions had been drinking alcohol. This is a 2.5% increase from 1985 and reverses a previous four-year downward trend (Figure 2-1).

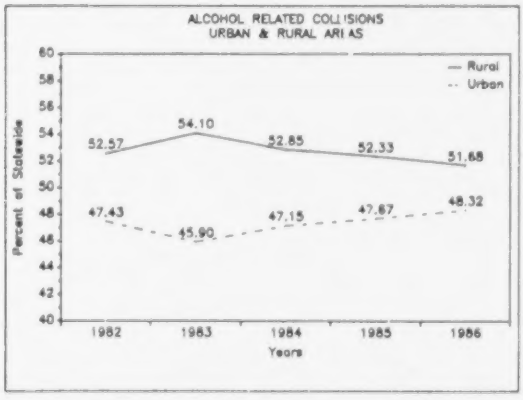
Figure 2-1



Location Of Alcohol-Related Collisions

In 1986 the urban-rural breakdown of alcohol-related collisions continued the trend established in 1984 with a decrease in rural areas and an increase in the urban areas compared to 1985; 51.68% of the alcohol-related collisions occurred in rural areas and 48.32% in urban areas (Figure 2-2).

Figure 2-2



The predominant type of alcohol-related vehicle collision continued to be multiple-vehicle mishaps in urban areas (Figure 2-3) with the opposite holding true in rural areas (Figure 2-4). Of the urban collisions, 66.8% involved two or more vehicles while only 36.4% were multiple vehicle collisions on rural roads.

Figure 2-3

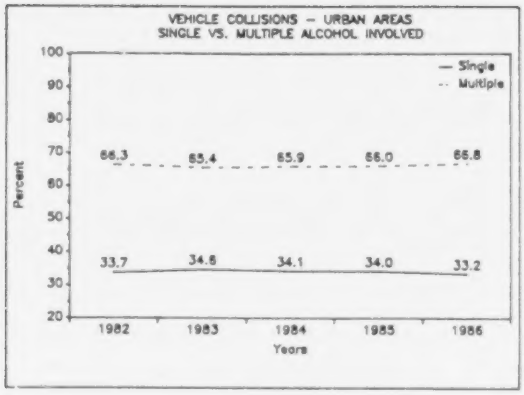
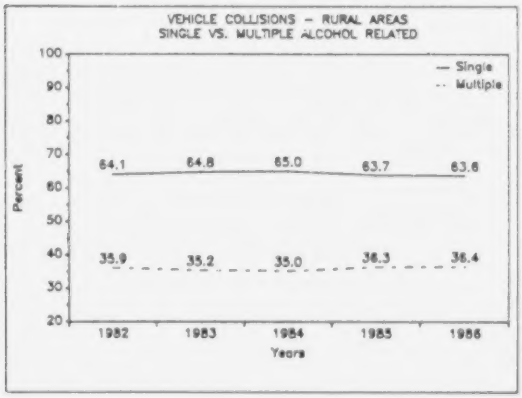


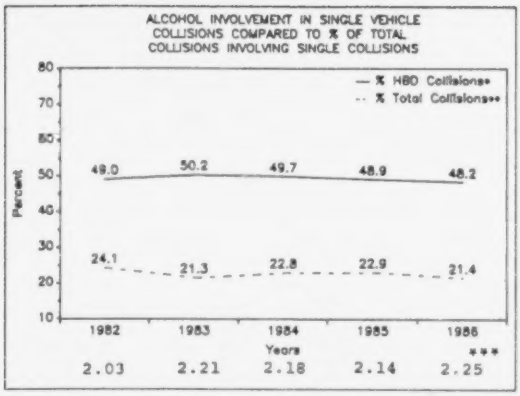
Figure 2-4



Single Vehicle Collisions Involving Alcohol

In 1986 the percentage of all single vehicle collisions where the driver had been drinking remained relatively stable at nearly 48.2% of the total alcohol-involved collisions. By comparison the percentage of total collisions that the single vehicle collision represents was only 21.4% in 1986 (Figure 2-5). Comparing the percentage of alcohol involvement in single vehicle collisions to the percentage of total collisions the single vehicle collision represents allows for the generation of a ratio to express the over-representation of alcohol in single vehicle collisions. In 1986, this ratio reversed a decreasing trend and increased from 2.14 in 1985 to 2.25 in 1986.

Figure 2-5



* Had Been Drinking
** Represented By Single Vehicle
*** Ratio

Figure 2-5 shows over-involvement of single vehicle alcohol-involved collisions compared to single vehicle collisions in total collisions.

Drivers Involved In Fatal Collisions

In 1986, 40.4% of the drivers involved in statewide fatal collisions had been drinking intoxicants. This is an increase from the 37.5% involvement recorded in 1985 and the first increase in seven years. In rural areas, 41.3% of the drivers in fatal collisions had been drinking, down only slightly from the 1982-85 average. In urban areas, the figure was 38.3%, a 1.35% increase from baseline. (Tables 2-1, 2-1a, 2-1b)

Table 2-1

SOBRIETY OF DRIVERS INVOLVED IN FATAL COLLISIONS
Statewide Comparison

Condition of Driver (Sobriety)	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Had been drinking - ability impaired	306	292	307	260	333	298	2.68%
Had been drinking - ability not impaired	51	43	52	37	39	43	19.30%
Had been drinking - sobriety unknown	13	11	11	31	51	26	-50.00%
Had not been drinking	546	577	574	502	489	536	1.96%
Not stated	35	45	41	62	49	49	-28.93%
Total drivers drinking	370	346	370	328	423	367	0.89%
Total drivers - excluding not stated	916	923	944	830	912	902	1.52%
Total drivers	951	968	985	892	961	952	-0.05%
No. drinking drivers per 100 involved	40.4	37.5	39.2	39.5	46.4	40.6	-0.62%
No. drunk drivers per 100 involved	33.4	31.6	32.5	31.3	36.5	33.0	1.23%

Table 2-1a

SOBRIETY OF DRIVERS INVOLVED IN FATAL COLLISIONS
Rural Comparison

Condition of Driver (Sobriety)	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Had been drinking - ability impaired	228	223	246	198	265	233	-2.15%
Had been drinking - ability not impaired	30	29	35	28	28	30	0.00%
Had been drinking - sobriety unknown	7	6	6	24	36	18	-61.11%
Had not been drinking	377	433	422	360	362	394	-4.38%
Not stated	16	21	24	32	21	25	-34.69%
Total drivers drinking	265	258	287	250	329	281	-5.69%
Total drivers - excluding not stated	642	691	709	610	691	675	-4.92%
Total drivers	658	712	733	642	712	700	-5.97%
No. drinking drivers per 100 involved	41.3	37.3	40.5	41.0	47.6	41.6	-0.78%
No. drunk drivers per 100 involved	35.5	32.3	34.7	32.5	38.4	34.4	3.11%

Table 2-1b

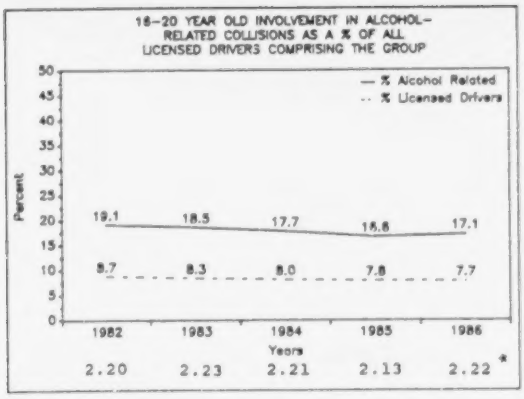
SOBRIETY OF DRIVERS INVOLVED IN FATAL COLLISIONS
Urban Comparison

Condition of Driver (Sobriety)	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Had been drinking - ability impaired	78	69	61	62	68	65	20.00%
Had been drinking - ability not impaired	21	14	17	9	11	13	64.71%
Had been drinking - sobriety unknown	6	5	5	7	15	8	-25.00%
Had not been drinking	169	144	152	142	127	141	19.65%
Not stated	19	24	17	30	28	25	-23.23%
Total drivers drinking	105	88	83	78	94	86	22.45%
Total drivers - excluding not stated	274	232	235	220	221	227	20.70%
Total drivers	293	256	252	250	249	252	16.39%
No. drinking drivers per 100 involved	38.3	37.9	35.3	35.5	42.5	37.8	1.35%
No. drunk drivers per 100 involved	28.5	29.7	26.0	28.2	30.8	28.7	-0.68%

Alcohol Involvement By Age Group

Drivers under 30 years of age continue to be over-represented in alcohol-related collisions. The 16-20 year old group comprised 7.7% of all licensed drivers in the state in 1986 but were involved in 17.1% of all alcohol-related collisions. This was an over-representation ratio of 2.22, meaning this age group was involved in slightly more than two times more alcohol-related collisions than the percentage of licensed drivers it represented (Figure 2-6). The over-involvement ratio for drivers aged 21-24 in 1986 was 2.57. This age group's over-involvement ratio has climbed steadily since 1982 (Figure 2-7). In 1986 the 25-29 year age group was involved in 1.63 times more alcohol-related collisions than the percentage of licensed drivers the group represented (Figure 2-8). The age group 30-54 was under-represented by a ratio of .74 last year (Figure 2-9). The remaining age group, 55 years and older was also under-represented by a ratio of .26 last year (Figure 2-9a).

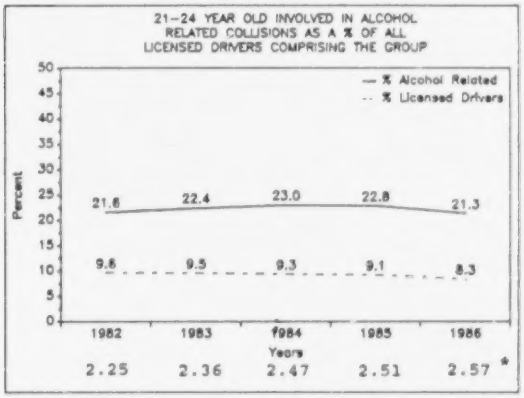
Figure 2-6



* Ratio:

Over-involvement in alcohol-related collisions compared to % of licensed drivers in the population.

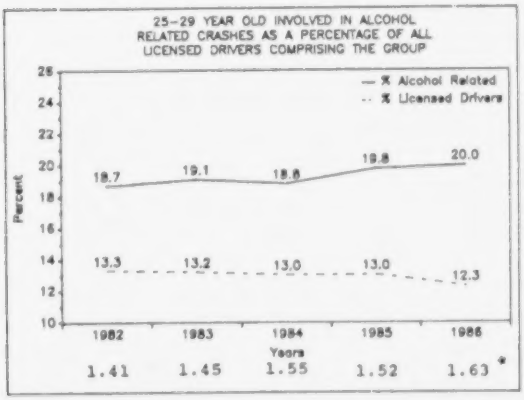
Figure 2-7



* Ratio:

Over-involvement in alcohol-related collisions compared to % of licensed drivers in the population.

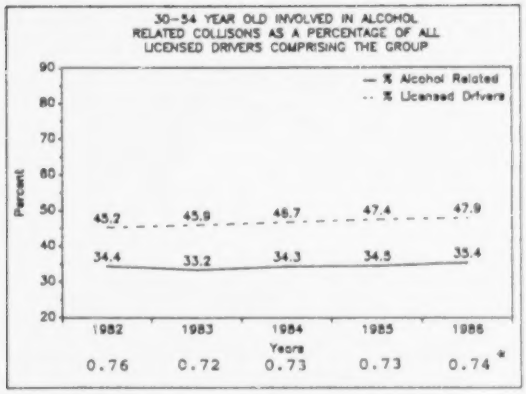
Figure 2-8



* Ratio:

Over-involvement in alcohol-related collisions compared to % of licensed drivers in the population.

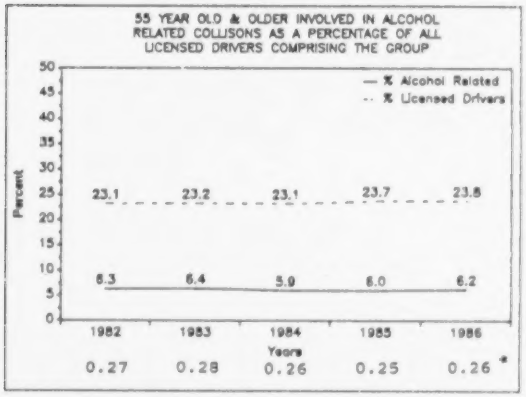
Figure 2-9



* Ratio:

Under-involvement in alcohol-related collisions compared to % of licensed drivers in the population.

Figure 2-9a



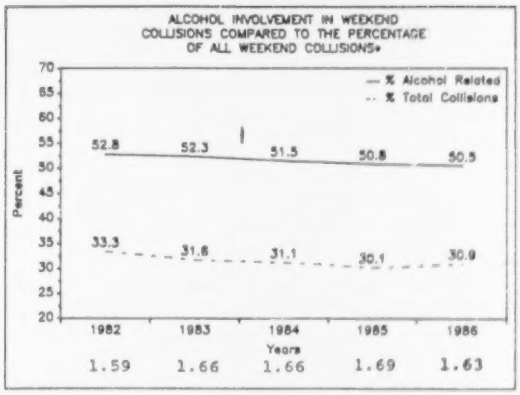
* Ratio:

Under-involvement in alcohol-related collisions compared to % of licensed drivers in the population.

Weekend Alcohol Involvement

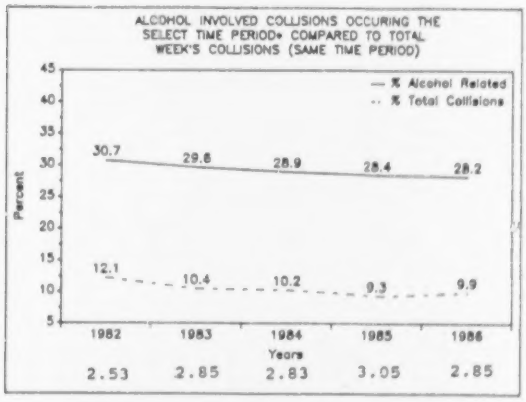
In 1986 the percentage of alcohol-related collisions occurred at a rate 1.63 times greater than all weekend collisions (Friday 6 p.m. to Sunday midnight). This was down only slightly in the over-representation ratio registered for the previous four years (Figure 2-10). In a further breakdown of weekend alcohol-related collisions comparing the percentage of alcohol-involved collisions occurring Friday and Saturday between the hours of 8 p.m. to 3 a.m. to the percentage of the total week's collisions occurring in this time frame, the alcohol-related collisions were nearly three times over-represented. This over-representation is down slightly from 1985 but about equals the 1983/84 ratio (Figure 2-11).

Figure 2-10



* Friday 6:00 p.m. through Sunday
** Over-involvement ratio

Figure 2-11

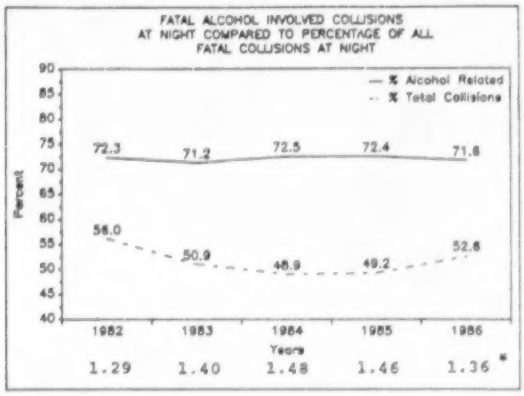


* Friday & Saturday 8:00 p.m. to 3:00 a.m.
** Over-involvement ratio

Fatal Alcohol Involved Collisions Occurring At Night

The number of all nighttime fatal collisions involving alcohol expressed as a percentage of all alcohol-related fatal collisions dropped during 1986 compared to the previous year. This is in contrast to a slight increase in all nighttime fatal collisions. All nighttime fatal collisions in 1986 comprised 52.6% of the year's total fatal collisions while alcohol-related nighttime fatal collisions reach 71.6%. In 1986 alcohol-related fatal collisions at night were over-represented when compared to all nighttime fatal collisions by a ratio of 1.36, down from the previous three-year period ratios (Figure 2-12).

Figure 2-12



* Ratio:

Over-involvement ratio % nighttime alcohol fatal collisions to % nighttime fatal collisions.

Ratio of Drinking And Drunk Drivers Involved in Traffic Collisions

Slightly over forty percent (40.4%) of all drivers in fatal collisions in 1986 had been drinking prior to the collision. This is a substantial increase from the previous year of 37.5%, a record low in this category following 1980's 49.4% high (Figure 2-13). Twelve percent of the drivers involved in all investigated collisions had been drinking prior to the collision. The 1986 drinking driver total of 18,127 represents a 2.2% increase from the previous four-year average (Figure 2-14).

Figure 2-13

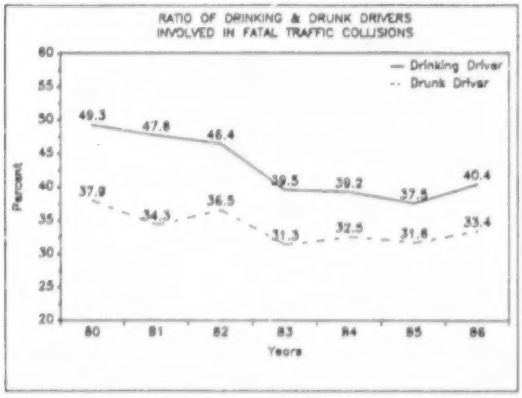
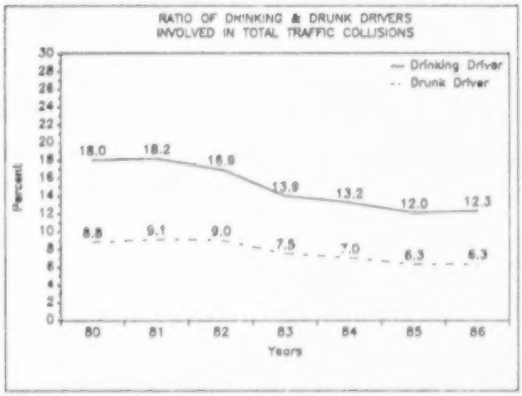


Figure 2-14



The total frequency of particular blood alcohol concentration (BAC) levels in fatal and serious injury collisions from 1982 through 1986 by age groups is presented in Table 2-2. The 16-20 and 21-24 age groups evidenced the greatest incidence of involvement for .05-.19 BAC levels. At the .15-.19 BAC range, the 20-24 age groups had the greatest frequency of occurrences. At the .20-.24 BAC levels, the 25-29 age groups had the greatest frequency of occurrences. At the .25 - .29 BAC levels, the 30-34 age group had the greatest frequency of occurrence. Overall, the 16-20, 21-24, and 25-29 age groups display the highest incidence of involvement at all BAC levels.

Table 2-2

CHEMICAL TEST FOR INTOXICATION IN FATAL & SERIOUS INJURY COLLISIONS

Age	Alcohol Level							Test Given No Results	Test Refused	Total Tested
	.00-.04	.05-.09	.10-.14	.15-.19	.20-.24	.25-.29	.30 & Up			
16-20	146	445	905	707	234	46	10	198	175	2,866
21-24	110	356	918	1,025	417	109	25	269	401	3,630
25-29	83	232	752	892	420	132	45	209	404	3,169
30-34	52	149	445	586	377	145	38	163	382	2,337
35-39	35	78	287	398	253	97	32	89	223	1,492
40-44	21	48	184	254	177	61	24	54	127	950
45-49	14	33	102	182	147	48	17	41	107	691
50-54	7	27	92	170	100	43	13	25	62	539
55-59	9	33	77	111	82	28	12	14	54	420
60-64	15	18	52	102	62	16	7	20	28	320
65-69	9	12	51	42	22	8	1	11	17	173
Over 69	10	14	43	44	20	7	0	8	10	156
TOTAL	511	1,445	3,908	4,513	2,311	740	224	1,101	1,990	16,743

An analysis of roadway type by day of week on which alcohol-involved fatal and serious injury collisions occurred is given in Table 2-3. County roads accounted for 33.7% of the total weekly collisions compared to 31.2% for city streets. U.S. and state routes total 24.1% while the interstates and full-control access roads together contributed 10.0% of the weekly total of fatal and serious alcohol-involved collisions during 1986. The table also reveals that during this period of time, Saturday was the weekday with the greatest frequency of fatal and serious injury collisions involving alcohol. Sunday and Friday were the next highest days in that order.

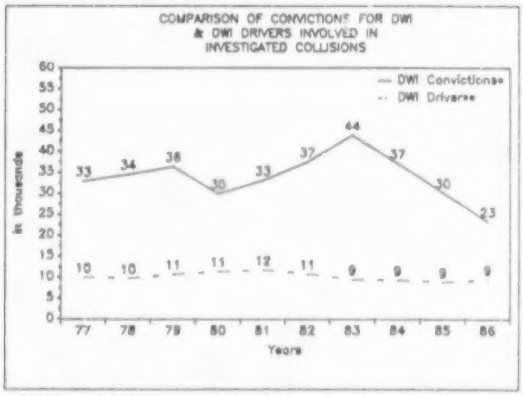
Table 2-3

FATAL & SERIOUS INJURY COLLISIONS INVOLVING ALCOHOL
Roadway Type by Day of Week

Roadway Type	Day of Week								% of Total Weekly Collisions	% of Previous 4 Year Average
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total		
County Roads	204	234	231	250	380	518	462	2,279	33.7%	35.1%
City Streets	210	194	237	247	330	520	370	2,108	31.2%	31.5%
U.S. & State Routes	127	163	189	181	271	417	281	1,629	24.1%	25.1%
Interstate & Full Control	55	61	78	91	114	159	116	674	10.0%	7.4%
Other Routes	8	6	6	7	8	18	14	67	1.0%	1.0%
Total	604	658	741	776	1,103	1,632	1,243	6,757	100.0%	100.0%
% of Total	8.9%	9.7%	11.0%	11.5%	16.3%	24.2%	18.4%	100.0%		
% of Change 86 - 4 Year Average	9.3%	9.2%	10.2%	11.4%	15.8%	24.8%	19.3%	100.0%		

In 1986 the number of convictions for alcohol-related traffic offenses declined for the third consecutive year. The 23,190 convictions in 1986 for DWI/Physical Control violations represented a drop of 20,645 convictions from the record high year of 1983. In 1986 the number of DWI drivers involved in investigated collisions increased to 9,335, the highest number recorded since 1982 when 10,609 drivers were involved (Figure 2-15).

Figure 2-15



* Fiscal Year
** Calendar Year

Note: Convictions for physical control of vehicle while under the influence decreased from 10,520 in FY 1979 to 1,866 convictions in FY 1980. DWI convictions increased from 25,788 in FY 1979 to 27,942 in FY 1980.

Data for collision involvement by driver's age and percent of vehicle miles traveled for each age group reveal that the 19 & younger have the greatest over-representation in all reported collisions at 5.02%. The 65 & over group was the second most over-represented group. The age group with the greatest under-representation based on miles traveled was the 55-64 category. The 19 & younger group displayed the greatest over-representation in alcohol-related collisions based on miles traveled. Second in this ranking was the 20-34 year old group. The age group 55-64 recorded the greatest under-representation in alcohol-involved collisions with a 0.30 ratio (Table 2-4).

Table 2-4

ALL REPORTED ACCIDENTS & ALCOHOL INVOLVED ACCIDENTS
Comparison of Miles Traveled

Driver Age	% of Vehicle Miles Traveled*	Drivers in All Accidents**		Alcohol Involved Accidents	
		%	Over/Under Ratio	%	Over/Under Ratio
19 & Younger	3.1	15.57%	5.02%	12.70%	4.10%
20 - 34	41.0	44.43%	1.08%	60.07%	1.47%
35-54	37.9	26.37%	0.70%	21.00%	0.55%
55-64	12.7	6.85%	0.54%	3.84%	0.30%
65 & Over	5.3	6.79%	1.28%	2.39%	0.45%

* Source - Nationwide Personal Transportation Study - U.S. Dept. of Transportation, 1983-84
** Source - Accident Records Unit - Washington State Patrol

Table 2-5 presents a summary of the number of persons killed and injured, number of property damage collisions, and total investigated collisions for drivers under the influence, all drinking drivers, and non-drinking drivers. Most categories of non-drinking driver collisions showed increases over 1985. The exception is the number of persons killed and those receiving disabling injuries; these recorded modest decreases. Drivers under the influence showed increases in "Persons Killed," "Persons Injured," and "Property Damage Only Collisions." Total "DWI" Collisions recorded a 7.3% overall increase. Alcohol-related (Drivers Had Been Drinking) collisions showed a similar increase when compared to the previous year.

Table 2-5

SUMMARY OF PERSONS KILLED & INJURED IN ALCOHOL RELATED COLLISIONS
Two Year Comparison

Status	Drivers Under the Influence			Drivers Who Had Been Drinking*			Non-Drinking Driver Collisions		
	1986	1985	% of Change	1986	1985	% of Change	1986	1985	% of Change
Persons Killed	331	326	1.5%	382	379	0.8%	332	377	-11.9%
Persons Injured	7,823	7,171	9.1%	13,517	12,384	9.1%	45,278	43,415	4.3%
Disabling	1,686	1,485	13.5%	2,642	2,425	8.9%	5,480	5,518	-0.7%
Non-Disabling	3,835	3,553	7.9%	6,574	6,015	9.3%	17,358	16,984	2.2%
Possible Injury	2,302	2,133	7.9%	4,301	3,944	9.1%	22,440	20,913	7.3%
Property Damage Accidents	3,921	3,768	4.1%	8,205	7,632	7.5%	48,089	46,442	3.5%
TOTAL ACCIDENTS***	9,256	8,625	7.3%	17,305	16,017	8.0%	79,226	76,553	3.5%

*Including Drivers Under the Influence
**Less than 1/10th of one percent
***Investigated Accidents Only

Table 2-6 displays the number of persons killed and injured by drivers "under the influence" and "who had been drinking" by months for 1984, 1985, and 1986. The summer months typically show a higher incidence of persons killed and injured for both categories of alcohol-involved drivers. The month of November, however, recorded an exceptionally high number of persons injured in both DWI and HBD crashes in 1986.

Table 2-6

PERSONS KILLED & INJURED IN ALCOHOL RELATED COLLISIONS BY MONTH
Three Year Comparison

Month	From Drivers "Under the Influence"						From Drivers Who "Had Been Drinking"					
	Persons Killed			Persons Injured			Persons Killed			Persons Injured		
	1986	1985	1984	1986	1985	1984	1986	1985	1984	1986	1985	1984
January	18	15	16	505	505	486	21	18	20	832	786	795
February	9	15	22	475	422	494	11	17	23	816	733	822
March	25	28	23	702	611	671	31	30	30	1,112	1,017	1,112
April	30	40	25	574	590	621	33	43	32	1,006	979	1,108
May	38	41	28	647	624	624	41	48	33	1,142	1,098	1,133
June	32	33	36	606	637	621	40	39	42	1,093	1,152	1,132
July	37	39	40	723	763	700	40	43	48	1,306	1,294	1,254
August	36	28	36	760	713	739	39	35	40	1,407	1,303	1,267
September	22	29	32	664	662	716	31	31	35	1,241	1,133	1,257
October	36	25	28	744	624	694	39	31	33	1,219	1,099	1,139
November	28	17	27	786	509	546	31	22	32	1,294	938	1,015
December	20	16	18	637	511	605	25	22	18	1,049	852	1,084
TOTAL	331	326	331	7,823	7,171	7,517	382	379	386	13,517	12,384	13,118

YOUTH INVOLVEMENT

Overview

Drivers 20 years old and under comprised 7.7% of all licensed drivers in the state in 1986, yet this age group was involved in 19.0% of the total 1986 collisions. This was a collision over-representation rate 2.47 times higher than the percentage of licensed drivers comprising this group. The 21-24 age group was involved in 13.9% of the total collisions while comprising 8.3% of all licensed drivers, producing an over-representation factor of 2.17. The 25-29 year old group, comprising 12.3% of all licensed drivers, was involved in 14.7% for an over-representation of 1.20. All other age groups were under-represented when their percentages of collision involvement were compared to their percentages of total licensed drivers (Table 3-1).

Table 3-1

COMPARISON OF DRIVERS INVOLVED TO NUMBER LICENSED
Driver Age Distribution

Driver Age	Involved in Collisions		% of Licensed Drivers	Over/Under Ratio
	Number	% of Total		
Under 16	746	0.39%	0.00%	0.00
16	6,105	3.22%	0.97%	3.33
17-18	15,502	8.18%	3.21%	2.55
19-20	13,579	7.16%	3.53%	2.03
21-22	13,719	7.24%	3.87%	1.87
23-24	12,663	6.68%	4.45%	1.50
25-29	27,870	14.70%	12.29%	1.20
30-34	23,547	12.42%	12.93%	0.96
35-39	19,558	10.32%	12.08%	0.85
40-44	13,524	7.13%	9.72%	0.73
45-49	9,396	4.96%	7.21%	0.69
50-54	7,501	3.96%	5.97%	0.66
55-59	6,978	3.68%	5.74%	0.64
60-64	6,000	3.17%	5.61%	0.56
65-69	4,809	2.54%	5.01%	0.51
70 & Over	8,055	4.25%	7.40%	0.57

Youthful Driver Involvement in Collisions By First Harmful Event

In 1986, 74.0% of those drivers age 24 years and younger who were involved in all collisions collided with other moving vehicles. This type of collision also resulted in the greatest percentage of fatal collisions (45.7%) and injury collisions (69.9%). Single vehicle collisions with fixed objects led to the second largest percentage of youthful driver involvement in total, fatal and injury collisions, at 15.5%, 26.7% and 16.9% respectively (Table 3-2).

Table 3-2

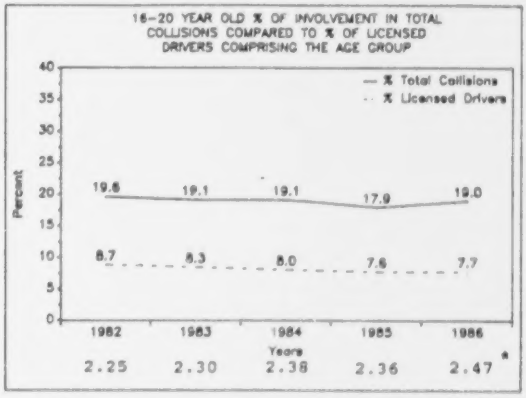
YOUTHFUL DRIVER INVOLVEMENT IN COLLISIONS
By First Harmful Event

Type of Collision	Total Collisions		Fatal Collisions		Injury Collisions	
	Number	% of Total	Number	% of Total	Number	% of Total
Collision with other moving motor vehicles	39,961	74.0%	137	45.7%	15,525	69.9%
Collision with parked vehicle	2,019	3.7%	3	1.0%	531	2.4%
Collision with fixed/other object	8,352	15.5%	80	26.7%	3,751	16.9%
Overturning & other non collision	2,560	4.7%	52	17.3%	1,571	7.1%
Collisions with pedestrians & pedalcyclists	786	1.5%	27	9.0%	752	3.4%
Other collisions - animal & R.R. train	310	0.6%	1	0.3%	66	0.3%
TOTAL	53,988	100.0%	300	100.0%	22,196	100.0%

Youthful Collision Involvement By Age Group

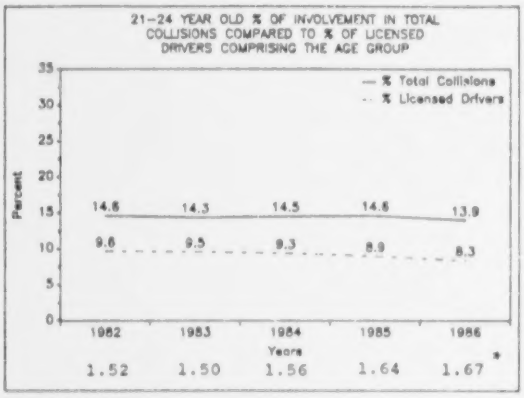
In 1986 the 16-20 year old age group was involved in 19.0% of all collisions. This group's over-representation ratio of 2.47 was up from the 2.36 ratio for 1985. It is also the highest over-representation ratio for any age group (Figure 3-1). The 21-24 year old age group increased its over-representation ratio from 1.64 to 1.67 (Figure 3-2). The 25-29 age group posted an over-representation ratio of 1.20, up from the previous year's 1.15 (Figure 3-3). The 30-54 age group continued to be under-represented in total collisions compared to this group's percentage of all licensed drivers, as did the 55 year old and older age group (Figure 3-4 & 3-4a).

Figure 3-1



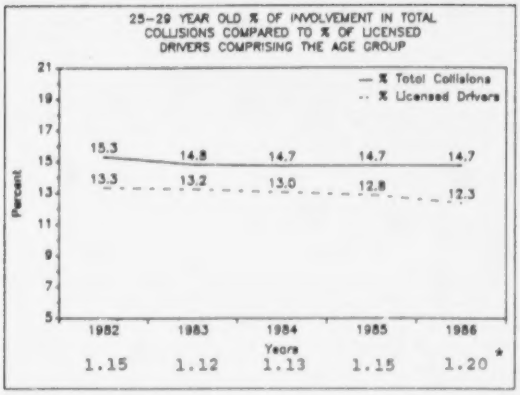
* Ratio:
Over-representation ratio

Figure 3-2



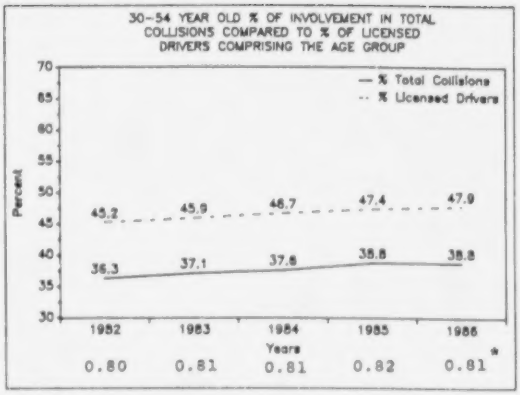
* Ratio:
Over-representation ratio

Figure 3-3



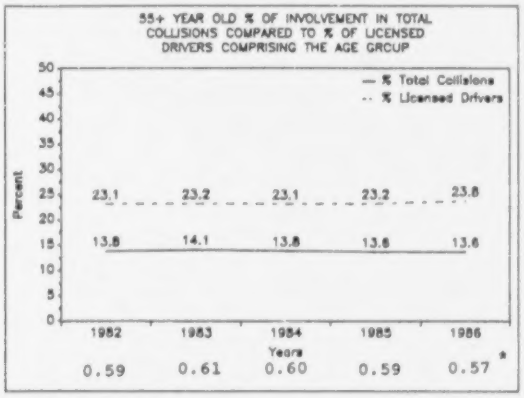
* Ratio:
Over-representation ratio

Figure 3-4



* Ratio:
Under-representation ratio

Figure 3-4a



* Ratio:
Under-representation ratio

Collision Severity By Area For Youthful Drivers

In 1986, the urban area collisions gained a full percentage point in the urban and rural mix of collisions involving youthful drivers (24 years old and younger). The urban areas recorded 58.9% of the total with the rural areas contributing 41.1% (Figure 3-5). In 1986, youthful driver injury collisions also increased in the urban area, recording 54.9% and 45.1% rural (Figure 3-6). Youthful driver fatal collisions continued to be far more common in rural areas. In 1986, 69.0% of the fatal collisions involving youthful drivers occurred in rural areas. The urban area, which recorded 32.0% of the total, increased nearly 5 percentage points over 1985 and 7 percentage points over 1984 (Figure 3-7).

Figure 3-5

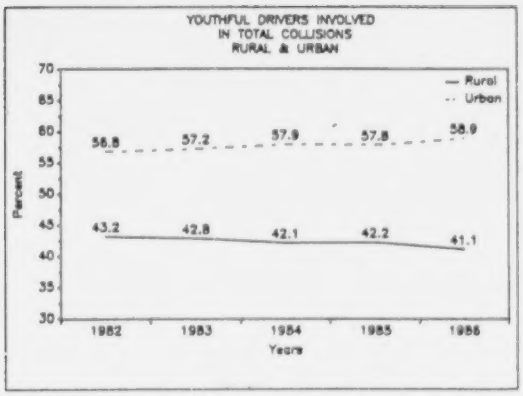


Figure 3-6

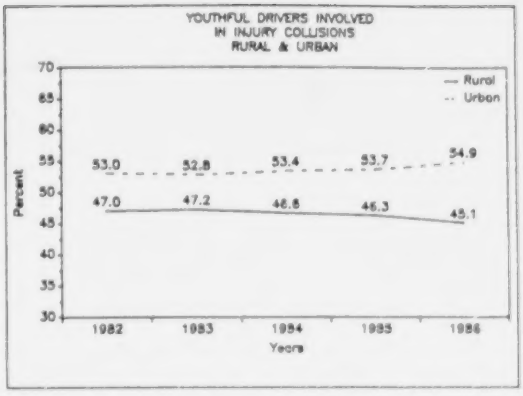
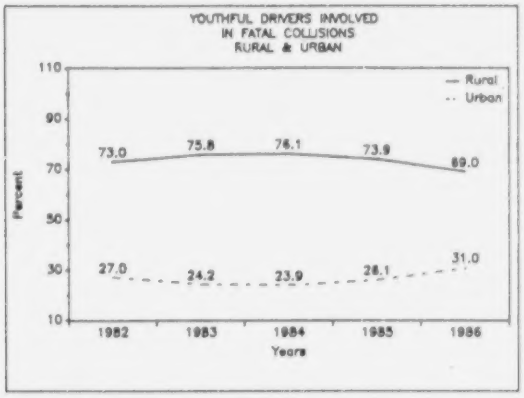


Figure 3-7



Youthful Driver Involvement By Time

In 1986, 21.7% of all the rural fatal collisions involving youthful drivers occurred on Sunday and 18.2% of all rural reported collisions occurred on Friday (Figure 3-8). In urban areas, Saturday had the highest occurrence of fatal collisions involving youthful drivers (26.9%), but Friday recorded the greatest percentage of total collisions (18.6%) for the group (Figure 3-9).

Figure 3-8

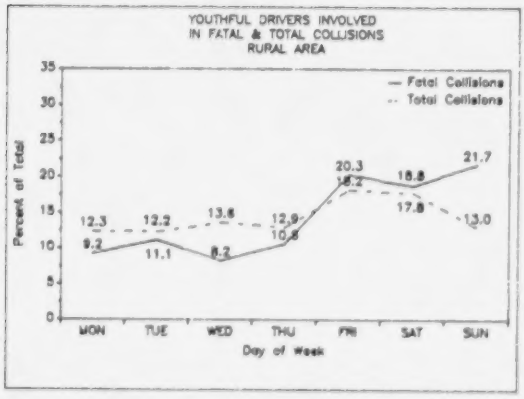
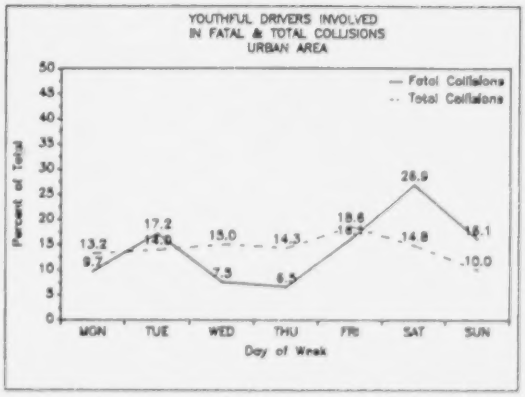


Figure 3-9



In rural areas, the greatest percentage (21.3%) of youthful driver involvement in fatal collisions in 1986 occurred from midnight to 3 a.m. The greatest percentage of total collision involvement (23.8%) for these drivers was from 3 p.m. to 6 p.m. (Figure 3-10). In the urban areas, the greatest youthful involvement by time period in fatal collisions was 23.7% in the midnight to 3 a.m. period. The 3 p.m. to 6 p.m. time period recorded 27.1% of the youthful drivers involved in total urban collisions (Figure 3-11).

Figure 3-10

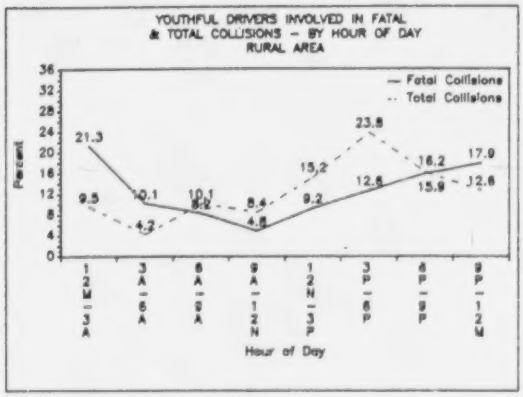
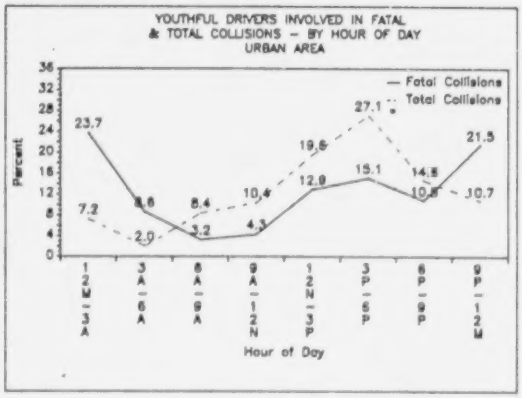

YOUTHFUL DRIVERS INVOLVED IN FATAL & TOTAL COLLISIONS - BY HOUR OF DAY
RURAL AREA
— Fatal Collisions
-- Total Collisions
Percent
Hour of Day

Figure 3-11


YOUTHFUL DRIVERS INVOLVED IN FATAL & TOTAL COLLISIONS - BY HOUR OF DAY
URBAN AREA
— Fatal Collisions
-- Total Collisions
Percent
Hour of Day

SAFETY RESTRAINT USAGE

Overview

In 1986, out of a total of 188,420 occupants involved in total collisions, 102,751 were using safety restraints. This is a usage rate of 54.5% and marks the fifth consecutive year of increases in safety restraint usage since 1981 (Table 4-1).

Table 4-1

RESTRAINT USAGE RATE
Five Year Comparison

Status	1986	%	1985	%	1984	%	1983	%	1982	%
Restraints Used	102,751	54.5%	60,392	35.1%	45,214	28.0%	31,751	21.0%	24,763	17.8%
No Restraints Used	85,669	45.5%	111,885	64.9%	116,299	72.0%	119,670	79.0%	114,686	82.2%
TOTAL	188,420	100.0%	172,277	100.0%	161,513	100.0%	151,421	100.0%	139,449	100.0%

In 1986, 102,739 persons out of a total of 188,390 collision-involved occupants were using a restraining device. Child restraints were used by 2,506 collision-involved children (Table 4-2). Looking at all restraining devices by usage and non-usage categories, it appears that with the safety restraint usage, injuries were less likely to occur and those that did occur were less severe (Appendix C, Table c-2c).

Table 4-2

RESTRAINT USAGE & INJURIES SUSTAINED*
By Type

Type	Restraints Used		Child Restraints**		No Restraints		Total Occupants	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Deaths	62	0.1%	1	0.0%	414	0.5%	476	0.3%
Disabling Injuries	1,583	1.5%	15	0.6%	3,719	4.3%	5,302	2.8%
Evident Injuries	7,141	7.0%	142	5.7%	11,484	13.4%	18,625	9.9%
Possible Injuries	12,394	12.1%	138	5.5%	10,289	12.0%	22,683	12.0%
No Injuries	81,559	79.4%	2,210	88.2%	59,745	69.8%	141,304	75.0%
TOTAL	102,739	100.0%	2,506	100.0%	85,651	100.0%	188,390	100.0%

*Excludes cases where injury severity was not stated or where restraint use was unknown.
**Included with Restraints Used Category.

In 1986, 59.6% of the female drivers used their restraints while 54.0% of the male drivers used their restraints in collisions. Female passengers had a usage rate of 55.0% compared to 46.7% for male passengers. The 0-5 age group had the highest restraint usage of any age group at 81.0%. The age group with the lowest usage rate was the 16-19 year olds at 44.2% usage (Table 4-3 and 4-3a).

Table 4-3

USAGE RATES BY SEX*
Five Year Comparison

Occupant	Percent Used Restraints				
	1986	1985	1984	1983	1982
Male Driver	54.0	34.3	27.3	22.0	19.1
Female Driver	59.6	38.8	31.4	23.6	20.0
Male Passenger	46.7	29.4	26.4	14.8	11.2
Female Passenger	55.0	36.0	28.4	18.9	15.3

*Excludes occupants where restraint use was unknown

Table 4-3a

USAGE RATES BY AGE*
Five Year Comparison

Occupant	Percent Used Restraints				
	1986	1985	1984	1983	1982
Age 0-5	81.0	73.1	66.8	42.3	32.2
Age 6-15	51.5	31.3	24.9	14.8	11.5
Age 16-19	44.2	27.0	20.8	15.2	12.9
Age 20-24	47.5	28.5	22.0	16.3	14.3
Age 25-34	47.5	36.6	29.5	23.0	19.6
Age 35-64	55.3	39.7	32.0	23.3	22.2
Age 65 & Up	60.6	34.7	27.6	21.4	18.3

*Excludes occupants where restraint use was unknown

Examination of restraint usage by occupant age for 1986 reveals that the 1 year and younger age group had the highest usage rate at 88%. The lowest rate of restraint usage (41.5%) was for 15 year old occupants. Teenage occupants recorded the lowest usage rate of any group with 44.2% (Table 4-4).

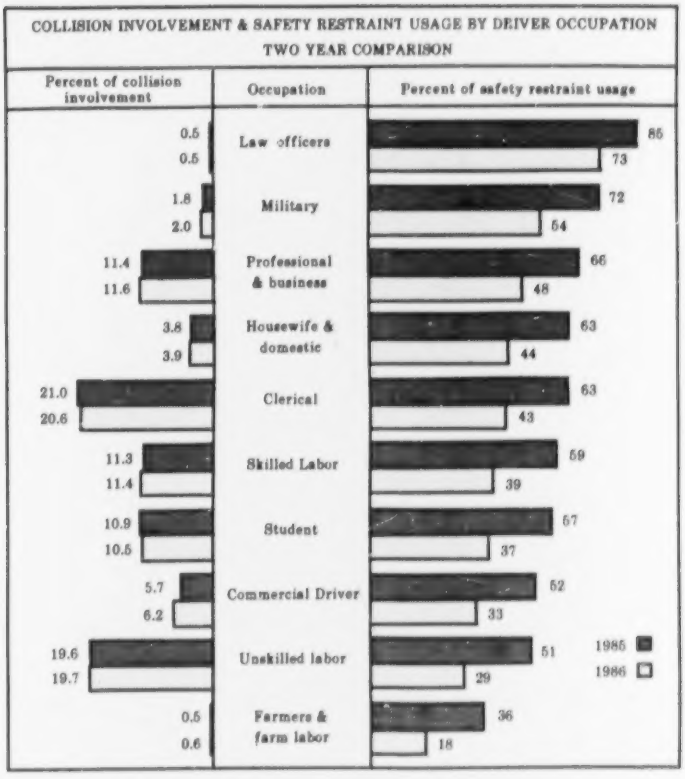
Table 4-4

SEAT BELT USAGE
By Occupant Age

Age	Seat Belt Type					Total Restraints Used		Restraints Not Used	
	Lap Belt	Shoulder Belt	Lap & Shoulder Belt	Child Restraint	Air Bag Activated	Number	% of Total	Number	% of Total
Under 1	28	3	58	592	0	681	88.1%	92	11.9%
1	104	8	98	700	0	910	88.4%	119	11.6%
2	297	15	189	570	0	1,071	81.7%	240	18.3%
3	395	21	229	289	0	934	78.8%	251	21.2%
4	491	29	291	129	0	940	77.3%	276	22.7%
5	449	19	280	69	1	818	74.8%	275	25.2%
6	341	17	231	19	0	608	67.7%	290	32.3%
7	295	14	198	12	0	519	66.5%	262	33.5%
8	264	10	193	5	0	472	62.7%	281	37.3%
9	242	9	205	3	1	460	60.4%	301	39.6%
10	208	21	193	3	0	425	58.9%	297	41.1%
11	162	13	178	5	2	360	54.5%	300	45.5%
12	165	14	219	3	0	401	52.7%	360	47.3%
13	173	16	214	0	0	403	46.9%	456	53.1%
14	220	30	320	0	0	570	44.2%	719	55.8%
15	428	45	630	0	0	1,103	41.5%	1,554	58.5%
16	1,060	171	2,420	0	0	3,651	47.2%	4,079	52.8%
17	1,145	196	2,426	0	2	3,769	43.8%	4,827	56.2%
18	1,046	173	2,310	0	0	3,529	42.7%	4,738	57.3%
19	810	129	2,117	0	0	3,056	43.0%	4,049	57.0%
20	745	139	1,945	0	0	2,829	44.5%	3,531	55.5%
21 - 24	2,850	494	8,313	0	1	11,658	48.1%	12,589	51.9%
25 - 29	2,931	561	9,175	0	1	12,668	53.3%	11,097	46.7%
30 - 64	9,086	1,973	30,322	0	8	41,389	59.6%	28,015	40.4%
65 & Over	1,673	371	4,802	0	2	6,848	60.7%	4,439	39.3%
Age Unknown	434	89	1,012	39	0	1,574	47.9%	1,711	52.1%
TOTAL	26,042	4,580	68,568	2,438	18	101,646	54.4%	85,148	45.6%

The usage rate of safety restraints by occupation of driver ranges from a high of 85.1% for law officers to a low of 36% for farmers and/or farm labor. Usage rates for all occupations showed substantial increases in 1986 over the rates for the preceding year (Figure 4-1).

Figure 4-1



Freeway travel (interstates) and other controlled access routes had the highest usage rate by vehicle occupants at 66.8%. Occupants of vehicles traveling on county roads had one of the lowest recorded usage rates at 50.5%. All other roadways, which include forest service roads and recreational roads which are open to public, recorded a 41.8% usage rate. (Table 4-5).

Table 4-5

RESTRAINT USAGE
By Functional Class of Roadway

Functional Class	1986	1985	1984	1983	1982
Interstate & limited	66.8	49.6%	41.0%	27.4%	29.0%
Other state routes	56.0	34.9%	28.9%	21.1%	17.8%
County Roads	50.5	31.6%	24.3%	17.7%	15.0%
City Streets	52.6	32.1%	26.4%	20.1%	16.3%
All others	41.8	29.7%	24.8%	19.8%	16.6%

Examination of safety restraint usage by vehicle type reveals substantial increases in usage rates for all types of vehicles. The lowest usage rate (48.8%) in 1986 was recorded for those in light trucks (Table 4-6).

Table 4-6

RESTRAINT USAGE RATE BY TYPE OF VEHICLE DRIVERS
Five Year Comparison

Type of Vehicle	1986	1985	1984	1983	1982
Passenger car	56.6	36.8%	29.8%	22.4%	19.0%
Light Trucks	48.8	29.8%	22.2%	16.2%	13.0%
Heavy Trucks	49.9	27.3%	20.1%	16.0%	15.2%
All others	52.9	34.6%	30.9%	21.5%	22.1%

In 1986, 84.1% of the occupants were using safety restraints in "other government (federal agency) registered vehicles" involved in collisions. This is up 23.1% from the preceding year. The next highest usage rate was the 76.3% reported for state registered vehicles. Occupants of county registered and municipal registered vehicles had the lowest usage rate of occupants in all government vehicles, recording 63.8% and 66.3% respectively. (Table 4-7).

Table 4-7

RESTRAINT USAGE RATE BY TYPE OF GOVERNMENT VEHICLES
Five Year Comparison

Type of Government Vehicle	1986	1985	1984	1983	1982
State registered vehicles	76.3%	77.4%	68.3%	60.0%	65.0%
County registered vehicles	63.8%	49.5%	43.6%	32.3%	37.3%
Municipal registered vehicles	66.3%	49.9%	41.4%	35.1%	28.1%
Other government registered vehicles	84.1%	68.3%	58.6%	54.2%	44.4%

Drivers residing within 15 miles of their collision scenes recorded the lowest seat belt usage rate in 1986. Just 55.5% in this category were using restraints. Out-of-state drivers continued to use restraints at the highest rate, 60.0%. All categories continued to record increases in restraint usage rates over previous years (Table 4-8).

Table 4-8

RESTRAINT USAGE RATE BY PROXIMITY OF DRIVER RESIDENCE
Five Year Comparison

Residence Proximity	1986	1985	1984	1983	1982
Resided within 15 miles of collision	55.5%	35.3%	28.2%	22.1%	18.9%
Resided over 15 miles	58.1%	38.9%	31.1%	23.7%	21.2%
Residing in other state	60.0%	41.3%	35.1%	28.6%	24.4%

An examination of restraint usage by seat position in 1986 reveals that occupants in the left back and right back positions were the most frequent restraint users at 58.1% and 58.0%, respectively. These positions include the greatest usage of child restraints. Drivers were the next most frequent users at 55.9%. Seat position occupants showing the least usage of restraints were those riding in the mid-front, where 34.0% were reported using restraints (Table 4-9).

Table 4-9

RESTRAINT USAGE RATE BY OCCUPANT SEAT POSITION
Five Year Comparison

Occupants	1985	1985	1984	1983	1982
Driver	55.9%	35.8%	28.6%	22.5%	19.3%
Mid-front	34.0%	21.2%	17.1%	10.6%	7.6%
Right-front	51.9%	31.9%	24.6%	17.0%	14.3%
Left-back	58.1%	42.6%	36.5%	22.2%	16.4%
Mid-back	44.4%	33.3%	25.7%	14.9%	11.0%
Right-back	58.0%	40.8%	34.6%	21.9%	16.2%
Other	21.5%	20.3%	13.0%	4.8%	3.8%
TOTAL	54.5%	35.1%	27.9%	21.0%	17.8%

Table 4-10 presents 1986 restraint usage by occupant age and seat position. The left-back and right-back for the 0-4 age group had the highest reported usage at 88.5% and 90.6%, respectively. For the 5-9 age group, the most frequent safety restraint usage also occurred in the left-back (74.5%) and right-back (74.7%) seat positions. The positions with the lowest reported usage rates for the 15-20 age group were the mid-front and mid-back seats--15.3% and 15.8%. The mid-back restraints were the lesser used in the 21-24 age group. The driver continued to "buckle up" more than any other occupant for those ages 15 through 64. The right-front occupant was the most frequent restraint user at 65.5% in the 65 and over age category.

Table 4-10

RESTRAINT USAGE RATE
By Occupant Age & Seat Position

Seat Position	Age							
	0-4	5-9	10-14	15-20	21-24	25-29	30-64	65 & Over
Driver	.	.	.	49.2%	50.5%	55.0%	60.6%	59.9%
Mid-front	68.6%	45.5%	30.1%	15.3%	20.2%	28.3%	33.7%	48.8%
Right-front	81.0%	69.6%	54.2%	41.3%	44.3%	48.6%	57.5%	65.5%
Left-back	88.5%	74.5%	53.8%	34.9%	31.7%	45.1%	46.8%	59.3%
Mid-back	60.8%	58.5%	36.9%	15.8%	16.1%	25.7%	28.1%	47.4%
Right-back	90.6%	74.7%	57.5%	37.2%	36.4%	41.8%	50.4%	55.1%
Other	50.6%	36.2%	17.9%	7.3%	5.1%	13.0%	8.3%	0.0%
Seat location unknown	54.7%	55.6%	45.4%	18.3%	19.2%	25.5%	23.8%	58.8%

A more detailed breakdown of types of restraints used by injury severity is presented for 1986 in Table 4-11. Of 476 occupants killed in vehicle collisions, 414 (87.0%) were not using restraints. Of the 5,302 persons sustaining disabling injuries by collisions, 70.1% were using no restraints.

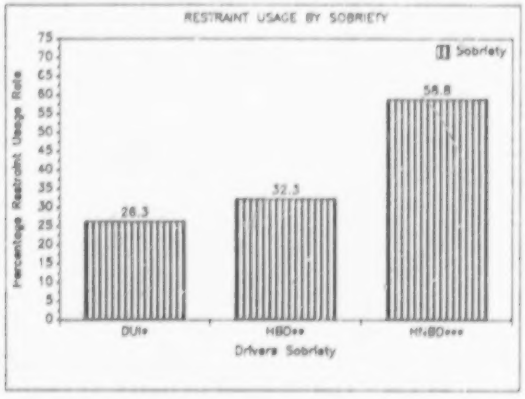
Table 4-11

TYPES OF RESTRAINTS USED
By Severity of Injury

Type	Number Used		Deaths		Disabling Inj		Evident Inj		Possible Inj		No Injury	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Lap Belt	26,261	13.9%	17	3.6%	423	8.0%	2,033	10.9%	2,802	12.4%	20,986	14.9%
Shoulder Belt	4,608	2.4%	0	0.0%	61	1.2%	292	1.6%	515	2.3%	3,740	2.6%
Lap & Shoulder Belt	69,346	36.8%	43	9.0%	1,084	20.4%	4,673	25.1%	8,937	39.4%	54,609	38.6%
Child Restraint	2,506	1.3%	1	0.2%	15	0.3%	142	0.8%	138	0.6%	2,210	1.6%
Air Bag (Activated)	18	0.0%	1	0.2%	0	0.0%	1	0.0%	2	0.0%	14	0.0%
No Restraints	85,651	45.5%	414	87.0%	3,719	70.1%	11,484	61.7%	10,289	45.4%	59,745	42.3%
TOTAL OCCUPANTS	188,390	100.0%	476	100.0%	5,302	100.0%	18,625	100.0%	22,683	100.0%	141,304	100.0%

Of all collision-involved drivers in 1986, those who had been drinking displayed a greater tendency not to use restraints than those drivers who had not been drinking. The latter category revealed a restraint-usage rate of 58.8% compared to a usage rate of 26.3% for drivers under the influence and 32.3% for drivers who had been drinking but were not under the influence (Figure 4-2).

Figure 4-2

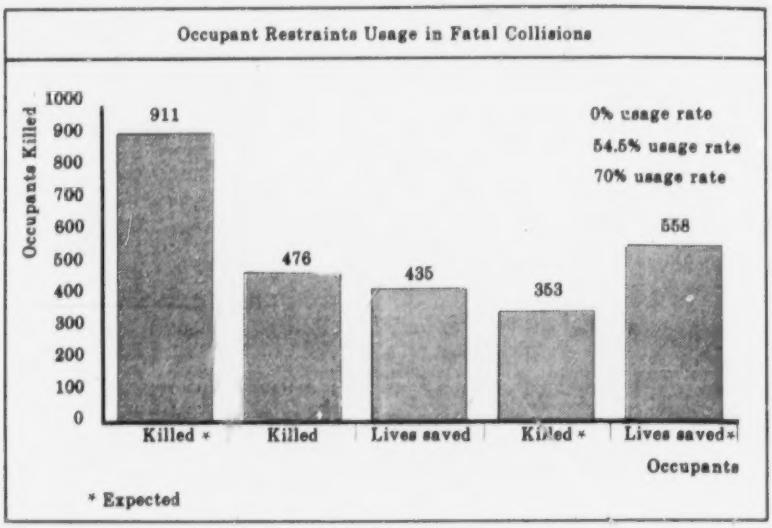


*Drivers under the influence
**Drivers had been drinking but not under influence
***Drivers had not been drinking

From the data obtained for restraint usage and number of fatalities in 1986, it is possible to project the number of fatalities that would have occurred under varying restraint usage rates (Figure 4-3). As shown in the middle block, occupant restraint devices were used by 54.5% of the occupants involved in collisions. At this usage rate, there were 476 fatalities. Based on this information, it is estimated

that 435 lives were saved by restraint usage. The block to the left presents the situation that could have been expected to exist if no restraints were used. Assuming that the usage rate among vehicle occupants could be brought up to the 70% level, it is projected that there would have been 353 fatalities and 558 lives would have been saved. From these computations, it appears that the higher the usage rate, the greater the savings in lives. (See Appendix C for computation.)

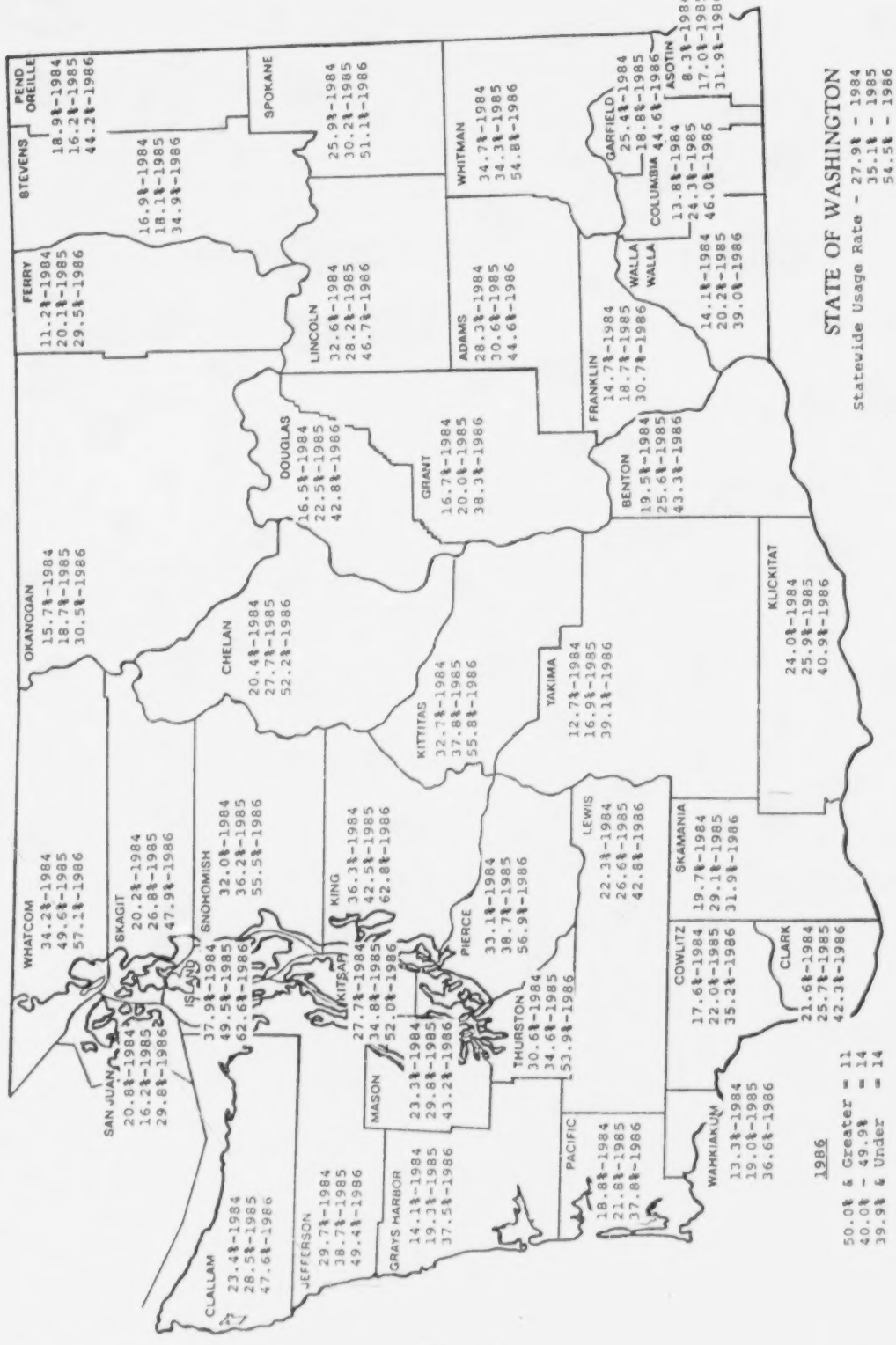
Figure 4-3



A graphic depiction of restraint use by county is presented in Figure 4-4. King County, at 62.8%, had the highest usage rate of all counties in the state in 1986. Island County had the next highest usage rate at 62.6%. The two counties with the lowest usage rate were Ferry County, recording a usage rate of 29.5%, and San Juan County at 29.8%.

OCCUPANT RESTRAINT USAGE RATE BY COUNTY
1984/86

Figure 4-4



MOTORCYCLE COLLISIONS

Overview

The 1986 motorcycle fatal collisions decreased 3.3%, when compared to the previous 4-year baseline average. Total reported collisions, however, recorded a 1.2% increase and injury collisions recorded a 1.7% increase over the baseline average. Registration in 1986 totaled 122,751 motorcycles, a decrease of 4.0% over the baseline period. The motorcycle collision rate of 2.86 for 1986 was up 5.4% over the baseline rate of 2.71 motorcycle collisions per every 100 registered (Table 5-1).

Table 5-1

MOTORCYCLE COLLISIONS SUMMARY
Five Year Comparison

Collision Severity/Exposure & Rates	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Total Collisions	3,508	3,699	3,477	3,312	3,376	3,466	1.21%
Fatal Collisions	80	82	69	77	103	83	-3.32%
Injury Collisions	3,003	3,139	2,965	2,839	2,867	2,953	1.71%
Motorcycle Registration	122,751	125,224	126,703	127,950	131,667	127,886	-4.02%
Fatal Collision Ratio*	22.8	22.2	19.8	23.2	30.5	23.9	-4.77%
Fatal Registration Rate**	0.652	0.655	0.545	0.602	0.782	0.646	0.95%
Total Collision Registration Rate***	2.86	2.95	2.74	2.59	2.56	2.71	5.43%

* Fatal Collisions per 1,000 motorcycle collisions
** Fatal Collisions per 1,000 motorcycles registered
*** Motorcycle involved per 100 registered

Motorcycle Collisions By Location

Table 5-2 displays a breakdown of motorcycle collision data by total for urban and rural areas as well as the state as a whole for 1986 and 1985. In 1986 rural areas again led urban areas in the total number of fatal collisions, 45 to 35, while urban areas led rural areas in total number of injury collisions, 1,685 to 1,318.

Table 5-2

MOTORCYCLE COLLISIONS BY LOCATION
Two Year Comparison

Severity of Collision	1986			1985		
	Urban	Rural	Statewide	Urban	Rural	Statewide
Total Collisions	2,026	1,482	3,508	2,022	1,677	3,699
Fatal Collisions	35	45	80	31	51	82
Injury Collisions	1,685	1,318	3,003	1,677	1,462	3,139
Property Damage Only, Collisions	306	119	425	314	164	478
Total Fatalities	35	46	81	32	53	85
All Persons Injured	2,049	1,624	3,673	2,036	1,848	3,884
Motorcyclists Killed	33	47	80	31	51	82
Motorcyclists Injured	1,904	1,523	3,427	1,884	1,748	3,632

A further breakdown of 1986 motorcycle collisions by road type indicates that about 55.0% of the total collisions, 53.4% of the injury collisions and 42.5% of the fatal accidents occurred on city streets. About 28.4% of the injury collisions, 27.1% of the total collisions and 27.1% of the fatal collisions happened on county roads. State routes recorded 8.9% of the injury and 8.7% of the total collisions as well as 16.3% of the fatal motorcycle collisions (Table 5-3).

Table 5-3

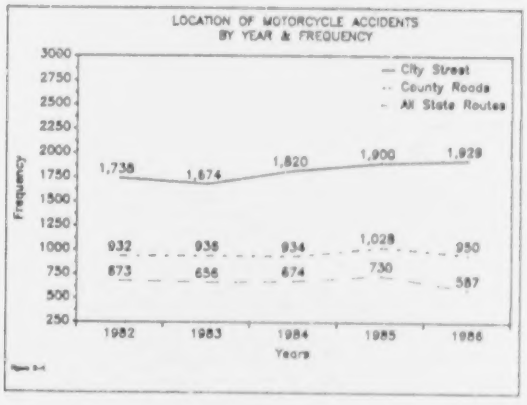
MOTORCYCLE COLLISIONS
by Location

Location	Collisions				Persons	
	Total	Fatal	Injury	P.D. Only*	Killed	Injured
Interstate System	193	2	167	24	2	200
Other Full Control	45	1	38	6	1	46
U.S. Route No.**	45	4	38	3	4	52
State Route No.**	304	13	268	23	14	350
County Roads	950	23	854	73	23	1,021
City Streets***	1,929	34	1,604	291	34	1,966
Other Traffic Ways	42	3	34	5	3	38
Total	3,508	80	3,003	425	81	3,673

* Property Damage Only
** Excluding city streets
*** Including U.S. and State Routes in Cities

Total frequency of motorcycle collisions occurring on city streets increased during 1986. This is the third year in a row where an increase occurred. Motorcycle collisions occurring on state routes reached a six-year low, recording 587 collisions. County roads recorded a decrease after a one-year increase in the number of collisions (Figure 5-1).

Figure 5-1



Motorcycle Collisions By Age Group

The 16-29 year old motorcycle rider continues to be over-represented in the accident population compared to the percentage of licensed motorcycle drivers comprising that age group. The 16-18 year olds were involved in 12.8% of the total collisions, but comprised less than 1% of the motorcyclists licensed to drive. From age 30 on up, motorcycle riders were under-represented (Table 5-4).

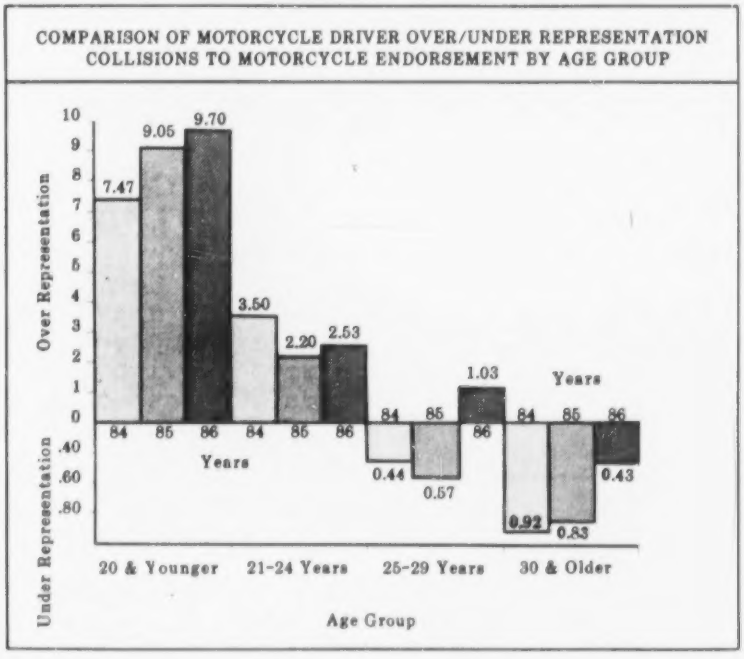
Table 5-4

MOTORCYCLE RIDERS
Comparison of Collisions to Licensed Drivers

Age	Fatal Collisions		Injury Collisions		Total Collisions		% of Licensed Drivers	Over/Under Ratio
	Number	%	Number	%	Number	%		
Under 16	2	2.5%	85	2.9%	93	2.8%	0.00	0.00
16	2	2.5%	71	2.4%	81	2.4%	0.05	48.63
17-18	9	11.4%	306	10.4%	348	10.4%	0.84	12.44
19-20	13	16.5%	423	14.3%	470	14.1%	2.18	6.47
21-22	10	12.7%	350	11.8%	409	12.3%	3.53	3.48
23-24	7	8.9%	287	9.7%	319	9.6%	5.11	1.87
25-29	11	13.9%	536	18.1%	605	18.2%	17.63	1.03
30-34	11	13.9%	357	12.1%	397	11.9%	21.65	0.55
35-39	5	6.3%	204	6.9%	225	6.8%	17.18	0.39
40-44	5	6.3%	124	4.2%	149	4.5%	11.49	0.39
45-54	1	1.3%	139	4.7%	151	4.5%	11.64	0.39
55-64	0	0.0%	59	2.0%	66	2.0%	5.97	0.33
65 & over	3	3.8%	13	0.4%	18	0.5%	2.72	0.20

Figure 5-2 shows that motorcycle riders under 29 years of age, and particularly those 20 years old and younger, were over-represented in total motorcycle accident involvement when compared to the percentages of licensed motorcycle riders comprising these age groups. The 30 year old and over age group continued to be under-represented.

Figure 5-2



Principal Violations In Collisions By Age Group

Speed too fast for conditions was the principal cause of motorcycle collisions for all age groups in 1986, contributing to 25.3% of the year's motorcycle violations. Motorcyclists' driving while intoxicated was the second leading violation, contributing 12.1% to the violation total. Speed over the legal limit was the third most predominant violation, contributing 12.0% to the total of motorcycle driver violations. This same trend was consistent for all age groups with the following exceptions: the 24 and younger age group recorded a 14.3% for speed-over limit, higher than the norm. The 25-29, 30-34, and 35-44 age groups reported a higher percentage rate for driving while under the influence of alcohol than the overall population (Table 5-5).

Table 5-5

MOTORCYCLIST VIOLATIONS BY AGE
Investigated Collisions Only

Violation	Violations		Age of Violator							Number Not Stated
	Total	%	20 & Under	21-24	25-29	30-34	35-44	45-54	55 & Over	
Speed - Conditions	640	25.3%	203	150	122	61	56	16	12	20
Speed - Over Legal	303	12.0%	121	78	47	24	22	4	1	6
Failed to Yield	179	7.1%	83	35	17	12	17	3	3	9
D.W.I.	306	12.1%	60	69	78	53	34	8	2	2
Following Too Closely	144	5.7%	44	34	31	11	10	6	6	2
Improper Passing	171	6.8%	62	35	35	11	11	4	3	10
Operating Defective Equipment	104	4.1%	38	18	15	6	13	6	5	3
Disregard Signs/Signals	90	3.6%	39	18	11	6	5	3	1	7
Over Centerline	67	2.6%	19	14	10	9	7	3	2	3
Other Violations	528	20.9%	163	110	83	51	54	24	21	22
Total	2,532	100.0%	832	561	449	244	229	77	56	84

Motorcycle Collisions By First Harmful Event

In 1986 the most common first harmful event causing a single motorcycle collision was overturning. This cause predominated for all age groups. In multiple vehicle collisions involving motorcycles, the rear-end collision was most prevalent (14.7%). Angular collisions constituted the next most common event (14.6%) in multiple vehicle motorcycle collisions. Collisions occurring while entering or leaving a driveway contributed to 12.3% of all motorcycle collisions. (Table 5-6).

Table 5-6

MOTORCYCLE COLLISIONS
By First Harmful Event

Type of Collision	Collisions		Age of Motorcyclist						
	Total	%	20 & Under	21-24	25-29	30-34	35-44	45-54	55 & Over
Single Motorcycle Collision									
Struck Fixed Object	353	10.6%	101	92	66	45	36	8	5
Struck Other Object	14	0.4%	4	1	3	2	3	1	0
Overturned	826	24.8%	212	175	155	98	110	46	30
Motorcycle-Pedestrian	21	0.6%	13	1	4	2	1	0	0
Motorcycle-R.R. Train	0	0.0%	0	0	0	0	0	0	0
Motorcycle-Pedalcyclist	17	0.5%	9	4	1	1	1	1	0
Motorcycle-Animal	60	1.8%	11	8	13	13	8	4	3
Non-Collision	29	0.9%	6	6	6	4	6	0	1
Total Single Motorcycle Collisions	1,320	39.6%	356	287	248	165	165	60	39
Multiple Vehicle Collision									
Head-on	47	1.4%	17	8	9	7	4	0	2
Rear-end	491	14.7%	137	112	94	60	53	22	13
Sideswipe	159	4.8%	48	34	26	20	19	8	4
Angular Direction	487	14.6%	153	104	87	59	54	21	9
Enter/Leave Driveway	411	12.3%	148	83	70	40	43	16	11
One Left/One Straight-Opp. Dir.	274	8.2%	80	64	50	32	24	19	5
Other Multiple Vehicle Collision	142	4.3%	53	36	21	14	12	5	1
Total Multiple Vehicle Collisions	2,011	60.4%	636	441	357	232	209	91	45
TOTAL MOTORCYCLE COLLISIONS	3,331	100.0%	992	728	605	397	374	151	84

Time Of Motorcycle Collision Occurrence

The milder weather months (June-October) of 1986 recorded the greatest percentage of motorcycle collisions. April through August recorded the most fatalities (Figure 5-3).

In comparing the frequencies of motorcycle collisions by day of week, Friday and Saturday are seen as the two days with the highest rate of occurrences. This trend has been consistent throughout the four-year baseline period and continued in 1986 as well (Figure 5-4).

Figure 5-3

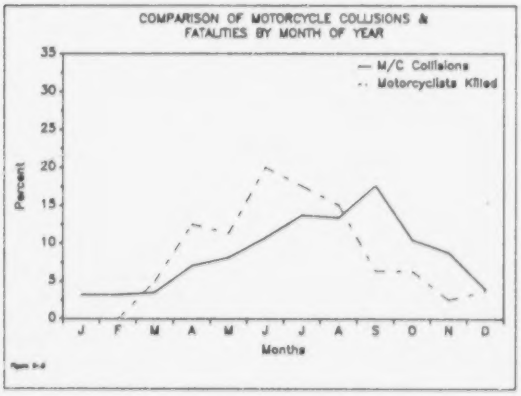
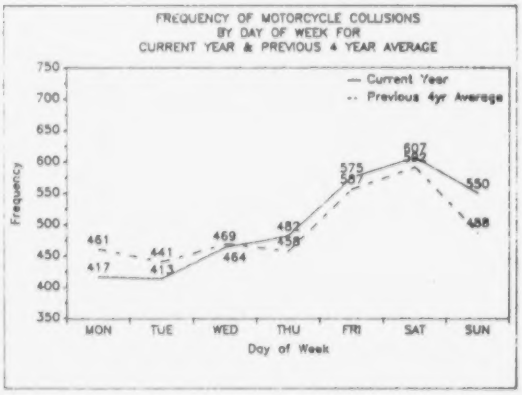
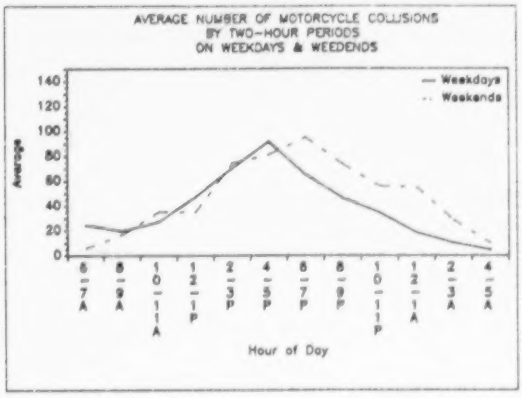


Figure 5-4



A further breakdown by hour of day when motorcycle collisions were occurring in 1986 reveals that the weekday hours from 2 p.m. to 8 p.m. constituted the most dangerous period of the day. The same 2 p.m. to 8 p.m. time frame also proved to be a dangerous time of day for weekend motorcycling (Figure 5-5).

Figure 5-5



PEDALCYCLES

Overview

In 1986 total pedalcyclist accidents increased 26.0% over the previous four-year average. The number of pedalcyclists killed increased 6.7% from the baseline period. The number of persons injured was up 25.5%. (Table 6-1).

Table 6-1

PEDALCYCLE TRAFFIC COLLISIONS
Five Year Comparison

Severity	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Total Collisions	1,507	1,325	1,174	1,230	1,056	1,196	25.98%
Persons Killed	12	12	11	14	8	11	6.67%
Persons Injured	1,538	1,354	1,204	1,266	1,078	1,226	25.50%

Rural - Urban Pedalcycle Collisions

Total pedalcycle collisions in 1986 were up 25.7% in rural areas and up 26.1% in urban areas compared to a four-year baseline period. The number of persons killed in rural areas in 1986 was 6, down two from the baseline, while six persons died in urban pedalcycle collisions, up two from the average of the previous four years. Rural injuries from pedalcycle collisions were up 26.5% in 1986 over baseline while urban injuries in this regard were up 25.0% (Table 6-2).

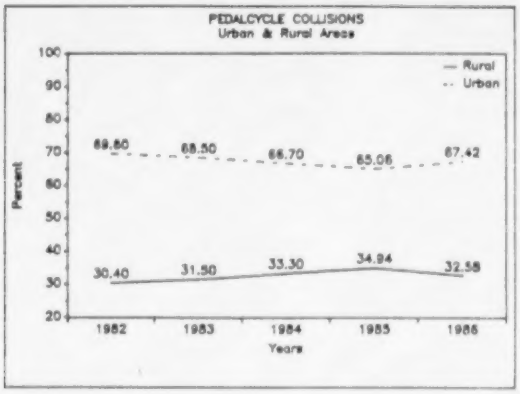
Table 6-2

RURAL & URBAN PEDALCYCLE ACCIDENTS
Five Year Comparison

Severity by Areas	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Rural Areas							
Total Collisions	491	463	391	387	321	391	25.74%
Persons Killed	6	9	8	10	4	8	-22.58%
Persons Injured	510	472	405	401	335	403	26.47%
Urban Areas							
Total Collisions	1,016	862	783	843	735	806	26.09%
Persons Killed	6	3	3	4	4	4	71.43%
Persons Injured	1,028	882	799	865	743	822	25.02%

In 1986, 67.4% of the pedalcycle collisions occurred in urban areas, reversing a previous downward trend from 1982's high of 69.6%. Rural areas, however, experienced a decrease in 1986, down from the 34.9% rate in 1985, but up from the 30.4% low point in 1982 (Figure 6-1).

Figure 6-1



Pedalcyclists Killed And Injured - By Age

In 1986, 41.7% of the pedalcyclists killed were in the 5-9 and 10-14 age brackets. These same age groups experienced 48.4% of the injuries. The number of pedalcyclists killed in 1986 increased by one from the four-year average while injuries rose by 311 (Table 6-3 and 6-4).

Table 6-3

PEDALCYCLISTS KILLED BY AGE
Five Year Comparison

Age	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
0-4	2	0	0	1	1	1	100.00%
5-9	2	3	1	1	1	2	NC
10-14	3	2	2	5	1	3	NC
15-19	1	2	1	4	1	2	-50.00%
20-24	1	0	0	2	0	1	NC
25-34	3	1	0	0	1	1	200.00%
35-44	0	1	3	0	0	1	-100.00%
45-54	0	2	0	0	1	1	-100.00%
55-64	0	1	1	0	1	1	-100.00%
65-74	0	0	2	1	1	1	NC
75 & Older	0	0	1	0	0	0	NC
Not Stated	0	0	0	0	0	0	0.00%
TOTAL	12	12	11	14	8	11	9.09%

Table 6-4

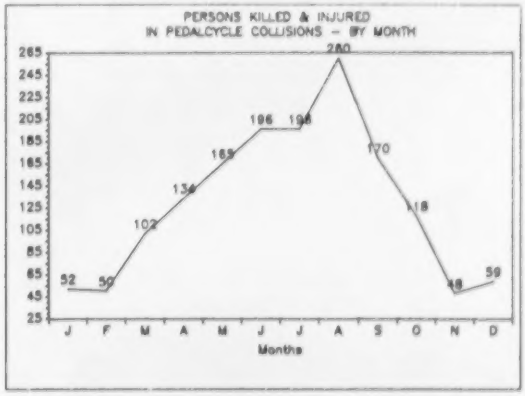
PEDALCYCLISTS INJURED BY AGE
Five Year Comparison

Age	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
0-4	18	31	19	21	16	22	-17.24%
5-9	266	251	171	180	160	191	39.63%
10-14	443	403	359	404	331	374	18.37%
15-19	296	241	240	240	197	230	28.98%
20-24	176	155	122	113	103	123	42.80%
25-34	170	143	147	139	126	139	22.52%
35-44	56	38	35	47	31	38	48.34%
45-54	18	15	17	11	15	15	24.14%
55-64	12	8	8	11	7	9	41.18%
65-74	7	2	11	4	4	5	33.33%
75 & Older	2	1	2	4	2	2	-11.11%
Not Stated	43	37	41	63	56	49	-12.69%
TOTAL	1,507	1,325	1,172	1,237	1,048	1,196	26.06%

Pedalcycle Fatal And Injury Collisions - By Month

The months of April through September accounted for nearly three-quarters of all injury and fatal pedalcycle accidents in 1986. This six-month period contained 72.3% of the year's total injuries and deaths (Figure 6-2).

Figure 6-2



The city of Puyallup experienced the highest pedalcycle collision rate in the state during 1986 with 87.63 collisions per 100,000 population. Olympia recorded the second highest collision rate in the state at 82.79 collisions per 100,000 population, followed by Everett with 73.99 and Kent with a 73.38 pedalcycle collision rate. (Table 6-5).

Table 6-5

PEDALCYCLE COLLISION RATE BY POPULATION
Cities 15,000 Population & Greater

City	1986 Population	Pedalcycle Deaths		Pedalcycle Injuries		Total Ped Collision	
		Number	Rate*	Number	Rate*	Number	Rate*
250,000 and Over							
1. Seattle	488,200	1	0.20	241	49.37	236	48.34
100,000 to 250,000							
1. Spokane	172,700	0	0.00	97	56.17	96	55.59
2. Tacoma	158,900	0	0.00	75	47.20	72	45.31
50,000 to 100,000							
1. Bellevue	81,770	0	0.00	32	39.13	33	40.36
2. Everett	59,470	0	0.00	45	75.67	44	73.99
25,000 to 50,000							
1. Yakima	49,590	1	2.02	31	62.51	30	60.50
2. Bellingham	46,380	0	0.00	28	60.37	27	58.21
3. Vancouver	42,380	0	0.00	24	56.63	24	56.63
4. Kennewick	36,600	0	0.00	8	21.86	8	21.86
5. Renton	34,460	0	0.00	11	31.92	12	34.82
6. Bremerton	33,420	0	0.00	22	65.83	22	65.83
7. Richland	30,240	1	3.31	8	26.46	9	29.76
8. Auburn	29,950	0	0.00	18	60.10	17	56.76
9. Longview	29,370	0	0.00	14	47.67	14	47.67
10. Olympia	28,990	0	0.00	21	72.44	24	82.79
11. Redmond	28,811	0	0.00	19	65.95	19	65.95
12. Kent	28,620	0	0.00	21	73.38	21	73.38
13. Edmonds	28,060	0	0.00	14	49.89	14	49.89
14. Walla Walla	25,590	0	0.00	19	74.25	18	70.34
15,000 to 25,000							
1. Lynnwood	24,000	0	0.00	12	50.00	12	50.00
2. Pullman	22,530	0	0.00	13	57.70	13	57.70
3. Mercer Island	20,670	0	0.00	6	29.03	6	29.03
4. Kirkland	19,410	0	0.00	7	36.06	7	36.06
5. Puyallup	19,400	0	0.00	19	97.94	17	87.63
6. Pasco	18,420	0	0.00	6	32.57	6	32.57
7. Wenatchee	17,980	0	0.00	9	50.06	9	50.06
8. Port Angeles	17,300	0	0.00	11	63.58	11	63.58
9. Aberdeen	17,010	1	5.88	2	11.76	4	23.52
10. Mountlake Terrace	15,590	0	0.00	8	51.31	8	51.31
11. Lacey	15,270	0	0.00	10	65.49	10	65.49

*Frequency per 100,000 population

PEDESTRIANS

Overview

The 89 pedestrians killed in 1986 were 5.3% fewer than the four-year average. The 1,752 pedestrians injured, however, were 1.9% above the four-year baseline (Table 7-1).

Table 7-1

PEDESTRIANS KILLED AND INJURED STATEWIDE - URBAN & RURAL
Five Year Comparison

Severity	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Pedestrians Killed	89	89	97	89	101	94	-5.32%
Pedestrians Injured	1,752	1,763	1,710	1,701	1,705	1,720	1.88%

Locations And Age Groups Of Pedestrian Collisions

In 1986, the number of pedestrian fatalities in rural areas was unchanged from the previous four-year average while injuries decreased 9.0%. Urban area pedestrian fatalities in 1986 declined 11.6% from baseline while injuries increased 6.0% (Table 7-2).

Table 7-2

RURAL & URBAN PEDESTRIAN ACCIDENTS
Five Year Comparison

Severity by Area	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Rural Areas							
Pedestrians Killed	49	45	51	44	55	49	0.51%
Pedestrians Injure	432	483	449	471	496	475	-9.03%
Urban Areas*							
Pedestrians Killed	40	44	46	45	46	45	-11.60%
Pedestrians Injure	1,320	1,280	1,261	1,230	1,209	1,245	6.02%

* 2,500 population and greater

Pedestrians Killed And Injured - By Age

In 1986, the overall number of pedestrians killed was identical to the 89 killed in 1985. The number of younger pedestrians ages 15 to 19 increased, however, from three in 1985 to ten in 1986 and was up two when compared to the previous four-year average. The number of older (65 & older) pedestrians injured was down one from the previous four-year average. The largest percentage increases in pedestrians injured during 1986 was in the 35-44 year age bracket and the 25-34 year age bracket, recording a 28.5% increase and 16.5% increase respectively (Tables 7-3 and 7-3a).

Table 7-3

PEDESTRIANS KILLED BY AGE
Five Year Comparison

Age	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
0-4	2	3	8	4	5	5	-60.00%
5-9	4	11	6	6	6	7	-44.83%
10-14	2	3	8	4	6	5	-61.90%
15-19	10	3	6	13	8	8	33.33%
20-24	7	5	9	6	9	7	-3.45%
25-34	12	11	18	12	15	14	-14.29%
35-44	13	9	8	10	9	9	44.44%
45-54	7	7	4	5	2	5	55.56%
55-64	10	9	11	8	11	10	2.56%
65-74	8	7	6	8	13	9	-5.88%
75 & Older	14	21	13	13	17	16	-12.50%
Not Stated	0	0	0	0	0	0	0.00%
TOTAL	89	89	97	89	101	94	-5.32%

Table 7-3a

PEDESTRIANS INJURED BY AGE
Five Year Comparison

Age	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
0-4	77	83	75	84	79	80	-4.05%
5-9	231	203	215	216	225	215	7.57%
10-14	198	195	194	216	209	204	-2.70%
15-19	206	208	215	209	219	213	-3.17%
20-24	151	181	167	163	174	171	-11.82%
25-34	290	285	255	222	235	249	16.35%
35-44	176	169	126	124	129	137	28.47%
45-54	111	99	121	97	69	97	15.03%
55-64	76	90	89	89	89	89	-14.85%
65-74	72	92	89	90	61	83	-13.25%
75 & Older	98	82	80	89	103	88	10.73%
Not Stated	66	76	84	102	113	94	-29.60%
TOTAL	1,752	1,763	1,710	1,701	1,705	1,720	1.88%

Actions Of Pedestrians Killed And Injured

Thirty-four percent of the pedestrians killed or injured in the rural area of the state were struck while crossing the roadway, not at an intersection, during 1986. Another 18.2% were killed or injured while crossing at an intersection. The largest percentage of these pedestrians were in a ten-year age group of five to 14 years (Table 7-4).

Table 7-4

ACTIONS OF PEDESTRIANS KILLED & INJURED
Rural Areas

Action	Killed		Killed/Injured		Age					Number Not Stated
	Number	%	Number	%	0-4	5-14	15-24	25-64	65+	
Rural:										
Crossing, entering roadway at intersection	3	5.8%	95	18.2%	4	28	24	26	11	2
Not at intersection	17	32.7%	177	34.0%	12	70	36	38	14	7
Walking with traffic	4	7.7%	38	7.3%	0	5	15	15	1	2
Walking against traffic	5	9.6%	19	3.6%	0	1	7	7	4	0
Standing or working in roadway	8	15.4%	54	10.4%	0	1	18	27	2	6
Playing in roadway	0	0.0%	14	2.7%	1	10	2	1	0	0
Lying in roadway	2	3.8%	5	1.0%	0	0	2	3	0	0
Not in roadway	9	17.3%	81	15.5%	1	12	23	41	2	2
Other & Not Stated	4	7.7%	38	7.3%	1	9	10	14	3	1
TOTAL RURAL	52	100.0%	521	100.0%	19	136	137	172	37	20
% of Total Killed or Injured					3.6%	26.1%	26.3%	33.0%	7.1%	3.8%

Actions Of Pedestrians Killed And Injured

In urban areas in 1986, the most frequently involved pedestrian in fatal and injury accidents fell into the 25-64 year old age group, which accounted for 40.5% of all pedestrians killed or injured in traffic accidents. The most common contributing action of this age group was "crossing, entering roadway at intersection." Thirty seven of the 62 (59.7%) of the pedestrians four years of age or younger were killed or injured while crossing the roadway between intersections. Nearly one-half (48.9%) of the pedestrians age 5-14 were also killed or injured while crossing between intersections (Table 7-5).

Table 7-5

ACTIONS OF PEDESTRIANS KILLED & INJURED
Urban Areas

Action	Killed		Killed/Injured		Age					Number Not Stated
	Number	%	Number	%	0-4	5-14	15-24	25-64	65+	
Urban:										
Crossing, entering roadway at intersection	17	40.5%	739	51.9%	17	126	125	325	115	31
Not at intersection	17	40.5%	421	29.6%	37	150	76	115	31	12
Walking with traffic	2	4.8%	29	2.0%	0	2	9	17	1	0
Walking against traffic	0	0.0%	9	0.6%	0	2	1	5	0	1
Standing or working in roadway	0	0.0%	53	3.7%	0	0	8	41	0	4
Playing in roadway	0	0.0%	20	1.4%	4	8	5	2	0	1
Lying in roadway	3	7.1%	10	0.7%	0	1	2	6	1	0
Not in roadway	2	4.8%	90	6.3%	1	10	28	40	8	3
Other & Not Stated	1	2.4%	52	3.7%	3	8	9	25	5	2
TOTAL URBAN	42	100.0%	1,423	100.0%	62	307	263	576	161	54
% OF TOTAL KILLED OR INJURED					4.4%	21.6%	18.5%	40.5%	11.3%	3.8%

Pedestrian Collisions By Day Of Week And Hour Of Day

In 1986, Friday and Thursday were the two high days for pedestrian fatalities, recording 21.3% and 16.9% deaths respectively. Friday also recorded the highest number of reported pedestrian collisions (Figure 7-1). The 9 p.m. to midnight time period evidenced the greatest percentage of fatal pedestrian collisions at 23.6%. The 3 p.m. to 6 p.m. recorded the greatest number of reported pedestrian collisions with 28.7% (Figure 7-2).

Figure 7-1

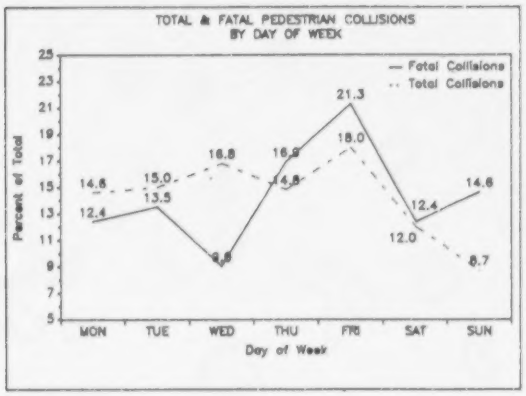


Figure 7-2

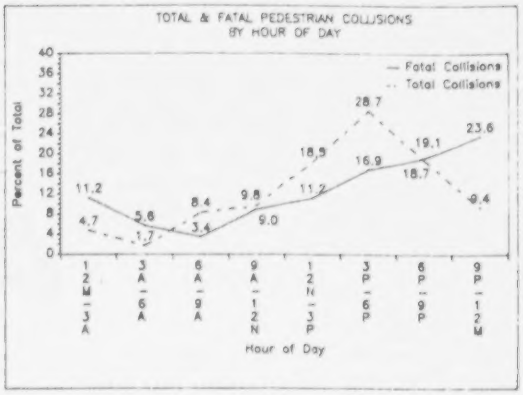


Table 7-6 below presents the 1986 number and rates for pedestrian traffic deaths, injuries, and total collisions for cities of 15,000 or more in Washington. Seattle had the greatest number of fatalities, but Auburn had the greatest rate of pedestrian fatalities at 6.68 per 100,000 population based on two pedestrian deaths. Seattle had the greatest number of pedestrian collisions and pedestrian injuries. However, Bremerton had the highest rate for total pedestrian collisions (104.73 per 100,000) and second highest rate for pedestrian injuries (110.71 per 100,000). Kent had the highest pedestrian injury rate with 118.80. Seattle had the second highest rate for total pedestrian collisions with 103.65 (Table 7-6).

Table 7-6

PEDESTRIAN COLLISION RATE BY POPULATION
Cities 15,000 Population & Greater

City	1986 Population	Pedestrian Deaths		Pedestrian Injuries		Total Ped Collision	
		Number	Rate*	Number	Rate*	Number	Rate*
250,000 and Over							
1. Seattle	488,200	19	3.89	522	106.92	506	103.65
100,000 to 250,000							
1. Spokane	172,700	7	4.05	117	67.75	118	68.33
2. Tacoma	158,900	5	3.15	125	78.67	124	78.04
50,000 to 100,000							
1. Bellevue	81,770	0	0.00	39	47.69	37	45.25
2. Everett	59,470	2	3.36	36	60.53	38	63.90
25,000 to 50,000							
1. Yakima	49,590	0	0.00	39	78.64	37	74.61
2. Bellingham	46,380	0	0.00	18	38.81	18	38.81
3. Vancouver	42,380	0	0.00	29	68.43	27	63.71
4. Kennewick	36,600	0	0.00	15	40.98	15	40.98
5. Renton	34,460	1	2.90	17	49.33	18	52.23
6. Bremerton	33,420	0	0.00	37	110.71	35	104.73
7. Richland	30,240	0	0.00	5	16.53	5	16.53
8. Auburn	29,950	2	6.68	17	56.76	17	56.76
9. Longview	29,370	0	0.00	18	61.29	16	54.48
10. Olympia	28,990	0	0.00	25	86.24	23	79.34
11. Redmond	28,811	0	0.00	7	24.30	7	24.30
12. Kent	28,620	0	0.00	34	118.80	29	101.33
13. Edmonds	28,060	0	0.00	12	42.77	12	42.77
14. Walla Walla	25,590	0	0.00	8	31.26	7	27.35
15,000 to 25,000							
1. Lynnwood	24,000	0	0.00	15	62.50	15	62.50
2. Pullman	22,530	0	0.00	4	17.75	4	17.75
3. Mercer Island	20,670	0	0.00	2	9.68	2	9.68
4. Kirkland	19,410	0	0.00	13	66.98	12	61.82
5. Puyallup	19,400	0	0.00	16	82.47	14	72.16
6. Pasco	18,420	0	0.00	17	92.29	16	86.86
7. Wenatchee	17,980	0	0.00	15	83.43	14	77.86
8. Port Angeles	17,300	0	0.00	5	28.90	5	28.90
9. Aberdeen	17,010	1	5.88	3	17.64	4	23.52
10. Mountlake Terrace	15,590	0	0.00	7	44.90	6	38.49
11. Lacey	15,270	0	0.00	8	52.39	5	32.74

*Frequency per 100,000 population

HEAVY TRUCKS

Overview

In 1986 7,983 heavy trucks were involved in collisions, for a 12.3% increase over the four-year baseline. Registrations in 1986 totaled 164,000, a 10.7% increase over the four-year average. Based on this registration figure, the 1986 collision rate was 486.8 collisions per 10,000 registered trucks, an increase of 1.9% over the previous four-year average.

There were 66 heavy trucks involved in fatal collisions during 1986. This was a 12.0% decrease compared to the baseline average. The fatal collision rate of 4.0 collisions per 10,000 registered trucks was a 20.2% decrease from the baseline period (Table 8-1).

Table 8-1

SUMMARY OF HEAVY TRUCKS
Heavy Trucks Involved in Traffic Collisions

Collision Severity/Exposure & Rates	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Total Trucks Involved in Collisions	7,983	8,605	7,472	6,525	5,822	7,106	12.3%
Trucks Involved in Fatal Collisions	66	85	87	65	63	75	-12.0%
Registration of Heavy Trucks*	164,000	155,000	150,661	145,595	141,225	148,120	10.7%
Total Collision Rate**	486.8	555.2	495.9	448.2	412.2	477.9	1.9%
Fatal Collision Rate**	4.0	5.5	5.8	4.5	4.5	5.0	-20.2%

* Estimated
**Collisions per 10,000 registered trucks

Location Of Heavy Truck Collisions By Severity

In 1986, 56.9% of the heavy trucks involved in total collisions were in urban areas (Figure 8-1). In 1986 there were 16 heavy trucks involved in fatal accidents in urban areas, compared to 50 in the rural areas. These figures comprise a 24.2 - 75.8% urban/rural proportion of involvement in fatal accidents, (Figure 8-2). The 1986 heavy truck involvement in injury accidents was split, 1,098 urban to 1,159 rural. These figures are 48.6 - 51.4% urban/rural split (Figure 8-3).

Figure 8-1

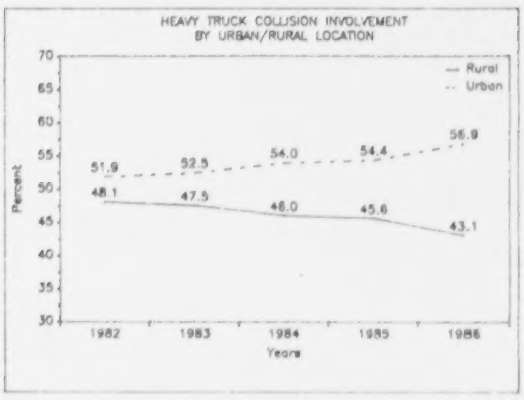


Figure 8-2

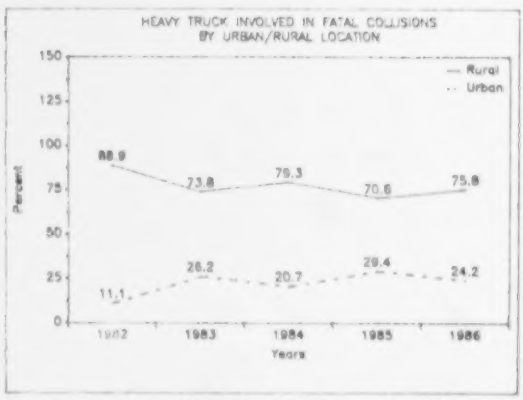
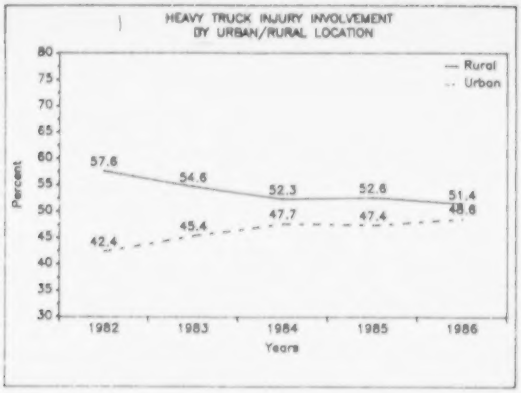


Figure 8-3



Age Of Drivers Involved In Heavy Truck Collisions

The 39 year old and younger drivers were over-represented in heavy truck collisions in 1986 compared to the percentage of licensed drivers each group comprised. The 19 and under group comprised 0.3% of all licensed heavy truck operators. Yet this group was involved in 2.8% of all heavy truck collisions, 3.1% of the heavy truck fatal crashes and 3.2% of the heavy truck injury collisions. The ratio for percent of collision involvement compared to percent of licensed drivers comprised by the 19 and under age group resulted in an over-representation ratio of 10.78 for this group. The 20-29 year old age group was involved in 30.0% of the total collisions, 31.3% of the fatal collision and 31.4% of the injury collisions. This group comprised 15.1% of all drivers having a classified endorsement on their licenses. Based on the percent of licensed drivers and collision involvement, this group was over-represented in collisions by a ratio of 1.99. The 30-39 year old age group was involved in 31.3% of the total reported collisions and made up 30.5% of the drivers having a classified endorsement on their license. The over-representation for this group was 1.03. The rest of the driver age groups were under-represented in total collisions (Table 8-2).

Table 8-2

DRIVERS INVOLVED IN HEAVY TRUCK COLLISIONS
By Age

Age	All Accidents		Fatal Accidents		Injury Accidents		% of Classified Drivers*	Over/Under Ratio**
	Number	%	Number	%	Number	%		
19 & Under	186	2.8%	2	3.1%	65	3.2%	0.3	10.78
20-29	2,004	30.0%	20	31.3%	631	31.4%	15.1	1.99
30-39	2,085	31.3%	16	25.0%	622	31.0%	30.5	1.03
40-49	1,313	19.7%	13	20.3%	369	18.4%	24.5	0.80
50-59	840	12.6%	11	17.2%	236	11.8%	16.6	0.76
60 & Over	242	3.6%	2	3.1%	85	4.2%	13.1	0.28

* Classified Endorsement is only required for operators of the larger trucks and truck combinations
** Percent of collision involvement to percent of licensed drivers

Heavy Truck Collision Occurrences By Time

The daily frequency of heavy truck collisions in 1986 was less than those occurrences of the two previous years while following about the same frequency pattern. The weekdays had the highest frequencies of heavy truck collision involvement with Friday recording the single day high. During the weekends, there was a substantial decline in the frequency of heavy truck involvement in collisions (Figure 8-4).

In 1986, the time period from noon to 3 p.m. recorded the highest incidence of heavy truck involvement in collisions. A substantial increase in collisions commenced during the 6 a.m. to 9 a.m. time period, peaking at the noon to 3 p.m. period, remaining high during the 3 p.m. to 6 p.m. period and then taking a sharp decline (Figure 8-5).

Figure 8-4

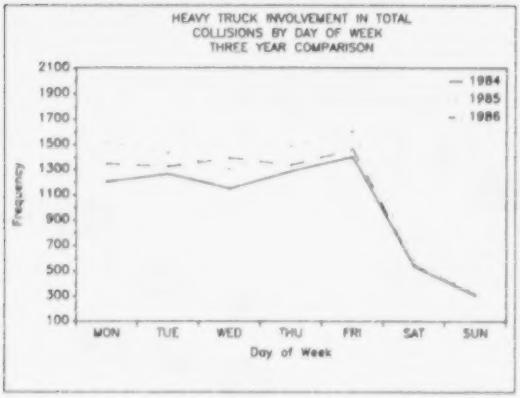
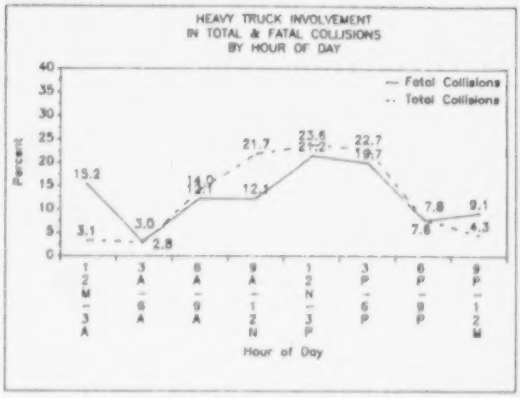


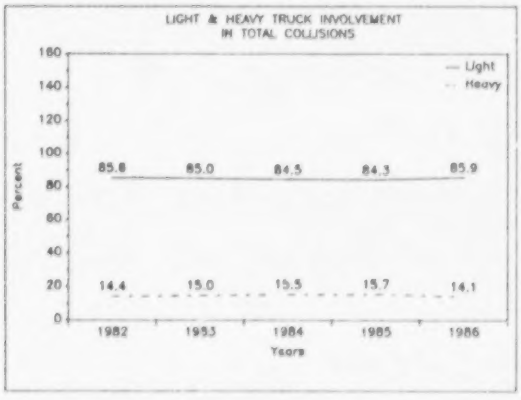
Figure 8-5



Total Collisions - Light Trucks vs. Heavy Trucks

In 1986 there were 48,572 light trucks and 7,983 heavy trucks involved in collisions. This 85.9% - 14.1% ratio between light and heavy trucks represents a slight change from the ratios of the previous three years (Figure 8-6).

Figure 8-6



Collisions By First Harmful Event

During 1986 heavy trucks were involved in 5,686 collisions involving other moving motor vehicles. This figure represents 73.7% of all heavy truck collisions. Heavy trucks also were involved in 600 collisions in which the other vehicle was parked and in 792 collisions with fixed or other objects. Overturning, other non-collisions and all other collisions accounted for the remaining heavy truck-involved collisions (Table 8-3).

Table 8-3

HEAVY TRUCK COLLISIONS BY FIRST HARMFUL EVENT
Four Year Comparison

Type of Collision	1986		1985		1984		1983	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Collision with other moving motor vehicles	5,686	73.7%	6,042	73.2%	5,170	72.4%	4,577	72.6%
Collision with parked vehicle	600	7.8%	643	7.8%	507	7.1%	409	6.5%
Collision with fixed/other object	792	10.3%	884	10.7%	801	11.2%	689	10.9%
Overturning	386	5.0%	414	5.0%	409	5.7%	394	6.2%
Other non-collision	116	1.5%	153	1.9%	139	1.9%	145	2.3%
All other collisions*	130	1.7%	116	1.4%	117	1.6%	93	1.5%

* Pedestrians, pedalcyclists, RR train & animal.

Heavy Truck Defects

In 1986 defective brakes accounted for 42.1% of the defects detected in heavy trucks involved in collisions. Other defects and the percentages were worn or smooth tires, 11.1%; defective rear lights, 6.1%; defective steering, 4.2%; and all other defects, 33.2% (Table 8-4).

Table 8-4

DEFECTS OF HEAVY TRUCKS INVOLVED IN COLLISIONS
Four Year Comparison

Condition of Vehicle	1986		1985		1984		1983	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Defective Brakes	329	42.1%	325	41.1%	359	44.0%	228	28.0%
Defective Headlights	4	0.5%	7	0.9%	6	0.7%	5	0.6%
Defective Rear Lights	48	6.1%	49	6.2%	61	7.5%	44	5.4%
Defective Steering Mechanism	33	4.2%	37	4.7%	28	3.4%	23	2.8%
Puncture or Blowout	21	2.7%	29	3.7%	37	4.5%	38	4.7%
Worn or Smooth Tires	87	11.1%	101	12.8%	93	11.4%	94	11.5%
Other Defects	259	33.2%	243	30.7%	231	28.3%	195	23.9%

PUPIL TRANSPORTATION

Overview

In the 1985-86 school year there were 338 reported school bus collisions in which 147 persons were injured. This represented a 24.6% increase over the previous three-year average in total school bus collisions but a 1.6% decrease in the number of persons injured. Injuries to pupils riding in the school buses totaled 29 for the 1985/86 school year, down 35.6% from the average of 45 pupils injured in the 3-year baseline period. There were 6,121 registered school buses in the 1985-86 school year. This marked a 0.2% decrease in registrations from the baseline period. School bus travel increased 8.8% during the 1985-86 school year compared to the previous three-year baseline period (Table 9-1).

Table 9-1

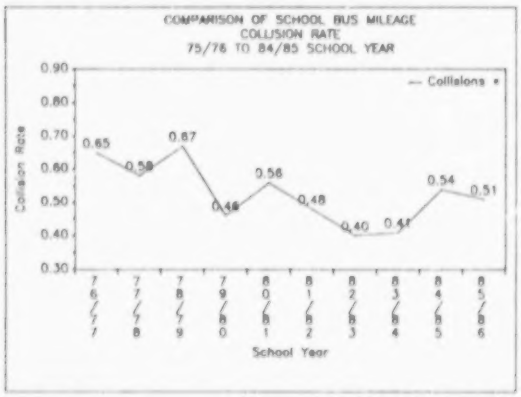
COLLISIONS INVOLVING SCHOOL BUSES
Four Year Comparison

Severity, Exposure & Rates	Years 85-86	84-85	83-84	82-83	Previous 3 Year Average	% of Change 86 - 3 Year Average
Total Collisions	338	310	248	256	271	24.57%
Fatal Collisions	0	2	0	2	1	-100.00%
Injury Collisions	95	91	75	85	84	13.55%
Property Damage Collisions	243	217	173	169	186	30.41%
Number Killed	0	2	0	1	1	-100.00%
Persons Injured						
Pupils	29	28	50	57	45	-35.56%
School Bus Drivers	19	23	11	12	15	23.91%
Other Occupants of School Bus	2	0	4	1	2	20.00%
Pedestrian/Bicyclist	5	4	6	2	4	25.00%
Occupants/Other Vehicles Involved	92	85	71	94	83	10.40%
Total Injured	147	140	142	166	149	-1.56%
School Bus Registration	6,121	6,107	6,005	6,286	6,133	-0.19%
Registration Collision Rate*	55.2	50.8	41.3	40.7	44.3	24.76%
Miles Traveled (in thousands)	66,586.6	57,849.3	61,042.7	64,713.1	61,201.7	8.80%
Mileage Collision Rate**	0.51	0.54	0.41	0.40	0.446	13.84%

* Collisions per 1,000 registered vehicles
** Collisions per 100,000

In the 1985-86 school year, the school bus mileage collision rate was .51 collisions per 100,000 miles of travel (Figure 9-1). This rate was down from the 1984-85 rate of .054 but up from the 0.45 rate of the previous three-year baseline (Figure 9-1).

Figure 9-1



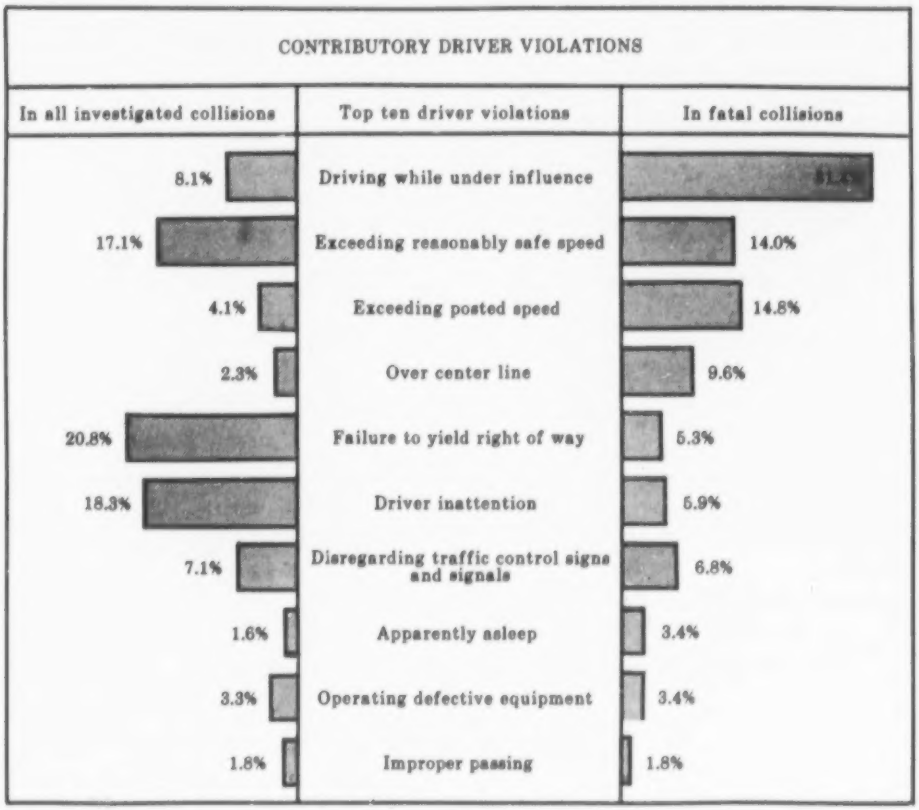
* Collisions Per 100,000 Miles Of Travel

CONTRIBUTORY DRIVER VIOLATIONS

Overview

Driving while under the influence of intoxicating liquor contributed to 31.4% of the driver violations in fatal collisions and 8.1% of all investigated collisions. Failure to yield right of way contributed to 20.8% of all investigated collisions and 5.3% of the violations in fatal collisions (Figure 10-1).

Figure 10-1



VEHICLE DEFECTS

Overview

In investigated collisions during 1986, only 5.13% of the collision-involved vehicles were found to have contributory vehicle defects. The most common defect was worn or smooth tires, a defect found in 3,129 vehicles. This represented a 4.3% increase in this category compared to the previous four-year average. Defective brakes, the second most contributory defect, was found on 2,026 collision-involved vehicles in 1986. This was an increase of 21.0% compared to the baseline (Table 10-1).

Table 10-1

VEHICLE CONDITION*
Five Year Comparison

Description	Years					Previous 4 Year Average (81-84)	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Defective Tires:							
Worn or Smooth Tires	3,129	3,043	2,996	2,964	2,828	3,001	4.3%
Puncture or Blowout	343	345	367	462	446	391	-12.4%
Defective Brakes	2,026	1,723	1,785	1,514	1,383	1,674	21.0%
Defective Lights:							
Headlights	167	156	143	149	150	149	11.8%
Rear Lights	373	370	394	361	394	375	-0.5%
Other Lights/Reflectors	112	97	122	95	95	105	7.0%
Defective Steering	287	307	381	308	281	332	-13.6%
All Other Defects	2,026	1,963	1,439	1,387	1,145	1,596	26.9%
No Defects	156,360	147,591	139,320	131,273	123,345	139,395	12.2%
TOTAL VEHICLES INVOLVED	164,823	155,595	146,947	138,513	130,067	147,018	12.1%

* Investigated Collisions

SENIOR DRIVER INVOLVEMENT

Overview

Drivers 55 years old and older were involved in 25,842 reported collisions, 140 fatal collisions, and 9,560 injury collisions during 1986. This was a 12.1% increase in reported collisions, 10.9% in injury collisions but a decrease of 0.9% in fatal crashes compared to the previous four-year baseline period. There were 719,784 licensed drivers 55 years old and older in 1986, up 6.7% from the baseline period. The fatal collision rate (total collisions per 1,000 licensed drivers) of 0.19 for 1986 was down 9.1% from the baseline period (Table 11-1).

Table 11-1

SENIOR DRIVER COLLISIONS - 55 YEARS & OLDER
Five Year Comparison

Collisions & Rates	Years					Previous 4 Year Average	% of Change 86 - 4 Year Average
	1986	1985	1984	1983	1982		
Total Collisions	25,842	24,978	23,630	22,897	20,736	23,060	12.1%
Fatal Collisions	140	144	149	153	119	141	-0.9%
Injury Collisions	9,560	9,264	8,855	8,643	7,713	8,619	10.9%
Licensed Drivers	719,784	706,719	686,985	664,355	641,441	674,875	6.7%
Fatal Collision Ratio*	5.42	5.77	6.31	6.68	5.74	6.12	-11.5%
Fatal Rate**	0.19	0.20	0.22	0.23	0.19	0.21	-9.1%
Total Collision Rate***	3.59	3.53	3.44	3.45	3.23	3.41	5.2%

* Fatal Collisions per 1,000 total collisions
** Fatal Collisions per 1,000 licensed drivers
*** Senior drivers involved per 100 licensed

Senior Driver Involvement In Collisions By First Harmful Event

In 1986, 86.8% of those drivers 55 years and older who were involved in all reported collisions collided with other moving vehicles. This type of collision also resulted in the greatest percentage of fatal collisions (56.3%) and injury collisions (83.8%). Single vehicle collisions with a fixed object led to the second largest percentage of senior drivers involvement in total, fatal and injury collisions at 6.1%, 22.7% and 7.1% respectively. While collisions with pedestrians and bicycles comprised only 2% of the total senior driver collisions, this collision type contributed to 11.7% of the fatal crashes and 5.1% of the senior's injury collisions (Table 11-2).

Table 11-2

SENIOR DRIVER INVOLVEMENT IN COLLISIONS
By First Harmful Event

Type of Collision	Total Collisions		Fatal Collisions		Injury Collisions	
	Number	% of Total	Number	% of Total	Number	% of Total
Collision with other moving motor vehicles	20,808	86.8%	72	56.3%	7,395	83.8%
Collision with parked vehicle	664	2.8%	0	0.0%	134	1.5%
Collision with fixed/other object	1,468	6.1%	29	22.7%	626	7.1%
Overturning & other non collision	351	1.5%	9	7.0%	188	2.1%
Collisions with pedestrian & bicycles	472	2.0%	15	11.7%	452	5.1%
Other collisions including RR train, animal	221	0.9%	3	2.3%	30	0.3%
TOTAL	23,984	100.0%	128	100.0%	8,825	100.0%

Senior Driver Collision Involvement By Age Group

Failure to yield right-of-way contributed to 49.1% of the total driver violation for drivers 75 years and older. This violation was also the leading violation for all drivers 55 years and older. This was followed by disregarding traffic control signs and signals for drivers 65 and over while speed too fast for conditions was the second leading contributing cause for drivers in the 55-59 group and the 60-64 year group (Table 11-3).

Table 11-3

SENIOR DRIVER COLLISIONS - 55 YEARS & OLDER
Percent of Total Circumstances by Age Group

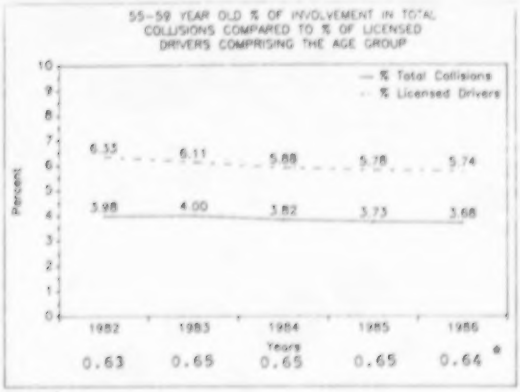
Contributing Circumstances*	55-59		60-64		65-69		70-74		75 & Older	
	Number	%	Number	%	Number	%	Number	%	Number	%
Failure to Yield Right of Way	900	29.4%	923	35.0%	903	37.7%	868	42.0%	1,450	49.1%
Speed--Too Fast For Conditions	386	12.6%	312	11.8%	193	8.1%	132	6.4%	145	4.9%
Disregarding Traffic Signal/Signs	275	9.0%	198	7.5%	250	10.4%	237	11.5%	335	11.3%
Following Too Closely	233	7.6%	203	7.7%	152	6.3%	123	5.9%	109	3.7%
Driving While Under the Influence	231	7.5%	148	5.6%	123	5.1%	57	2.8%	26	0.9%
Operating Defective Equipment	75	2.4%	56	2.1%	45	1.9%	32	1.5%	38	1.3%
Crossing Over the Centerline	68	2.2%	49	1.9%	45	1.9%	31	1.5%	54	1.8%
Exceeding Legal Speed	32	1.0%	20	0.8%	18	0.8%	10	0.5%	10	0.3%
All Other Circumstances including Driver Inattention	862	28.2%	725	27.5%	665	27.8%	578	27.9%	789	26.7%
TOTAL	3,062	100.0%	2,634	100.0%	2,394	100.0%	2,068	100.0%	2,956	100.0%

*Investigated collisions only

In 1986 the 55-59 year old group was involved in 6,978 reported collisions for 3.68% of all collisions. This group made up 5.74% of the total number of drivers licensed to drive in this state. The under-representation ratio of 0.64 was down from the 0.65 ratio of the previous year and also down slightly from the previous four-year baseline average (Figure 11-1). The 60-64 age group posted an under-representation ratio of 0.57, down slightly from the previous four-year baseline average (Figure 11-2). The 65-69

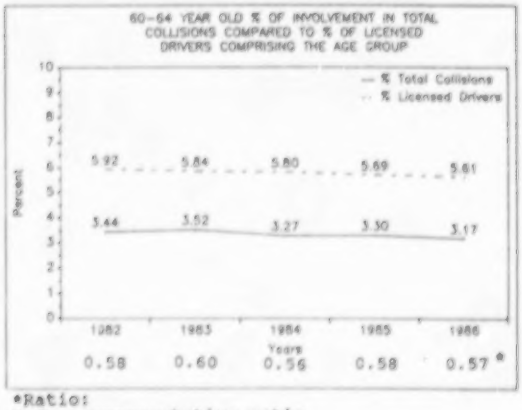
year old group recorded a 0.51 under-representation ratio, down from the .54 four-year average (Figure 11-3). The 70-74 age group recorded a 0.53 under-representation ratio, down from the .58 baseline average (Figure 11-4). The last group is the 75 years old and older group. This group had a .61 under-representation, also down from the baseline ratio of .67 (Figure 11-5).

Figure 11-1



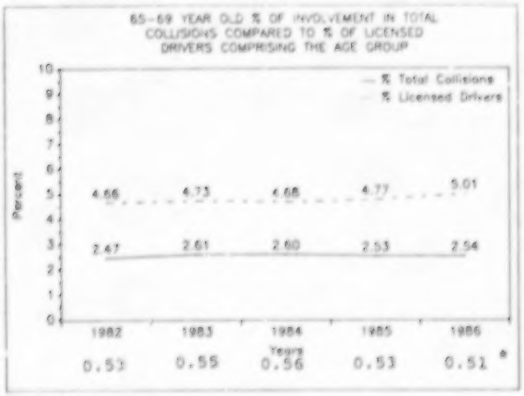
*Ratio:
Under-representation ratio

Figure 11-2



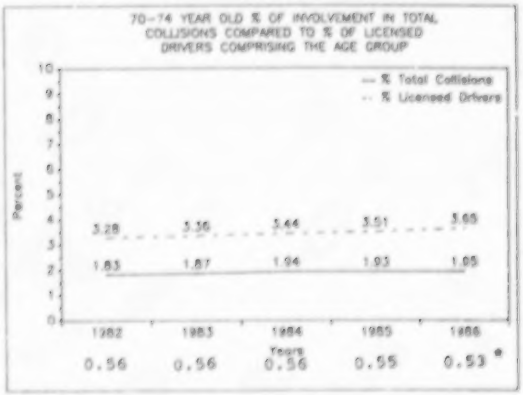
*Ratio:
Under-representation ratio

Figure 11-3



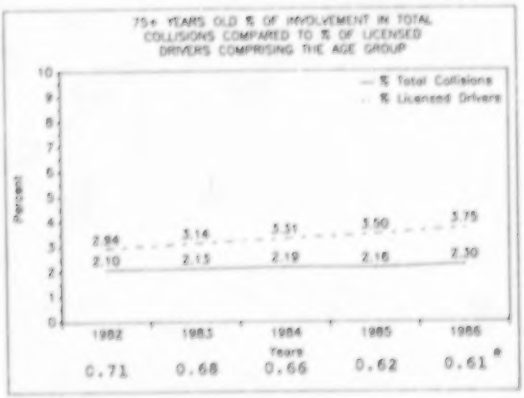
*Ratio:
Under-representation ratio

Figure 11-4



*Ratio:
Under-representation ratio

Figure 11-5



*Ratio:
Under-representation ratio

In 1986, urban collisions involving senior drivers (55 years old and older) increased slightly to 66.5% while rural collisions involving senior drivers made up 33.5% of the total (Figure 11-6). In 1986, senior driver injury collisions decreased in both the rural and urban areas over 1985 (Figure 11-7). Senior driver fatal collisions continued to be more common in rural areas. In 1986, 69.3% of the fatal collisions involving senior drivers occurred in rural areas (Figure 11-8).

Figure 11-6

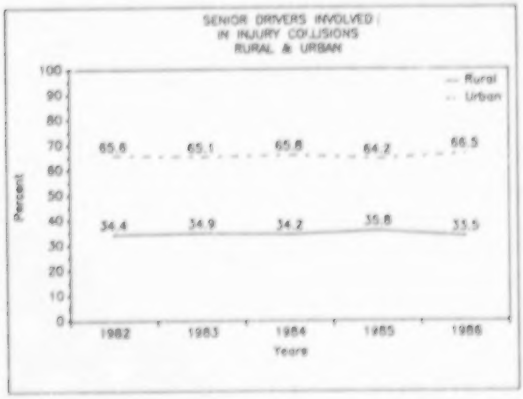


Figure 11-7

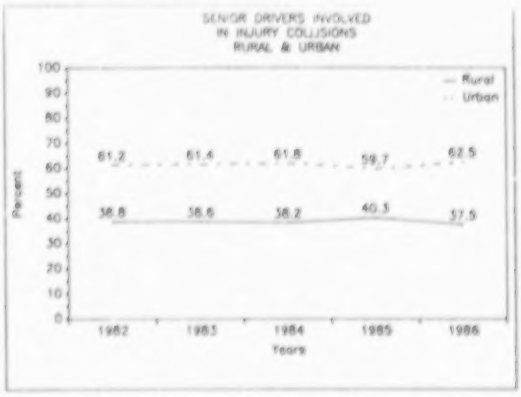
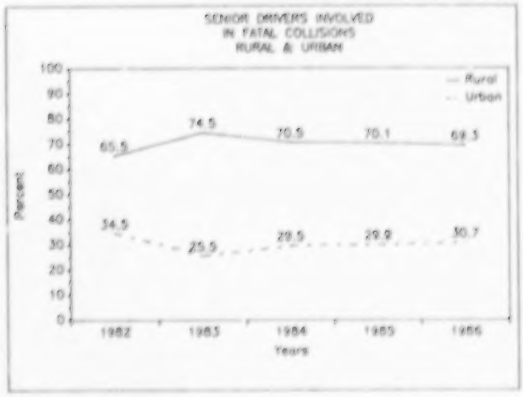


Figure 11-8



Senior Driver Involvement By Time

In 1986, 27.0% of all rural fatal collisions involving senior drivers occurred on Friday, 18% occurred on Sunday and Monday recorded 16.9%. Friday was the high day of the week for total reported rural collisions, recording 17.4% of the senior driver collisions followed by Monday with 14.9% and Wednesday and Thursday each with 14.8% of the collisions (Figure 11-9). Thursday and Saturday were the two highest fatal accident days, each recording 23.1% of the senior driver urban area collisions. Friday recorded the greatest percentage of urban total reported collisions (18.2%) for the group (Figure 11-10).

Figure 11-9

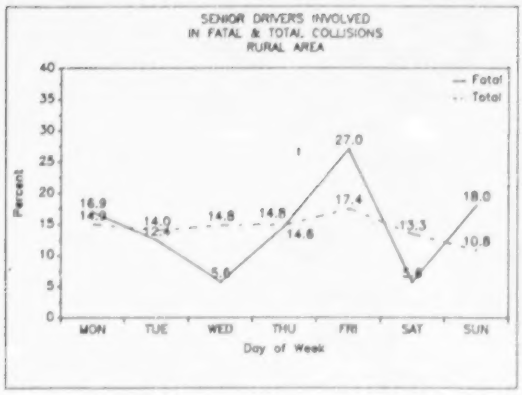
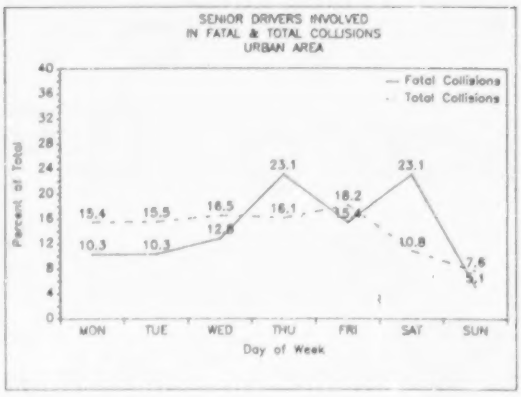


Figure 11-10



In rural areas, the greatest percentage (30.3%) of senior driver involvement in fatal crashes in 1986 occurred from 3 p.m. to 6 p.m.. The greatest percentage of total collision involvement (28.0%) for these drivers also occurred from 3 p.m. to 6 p.m. (Figure 11-11). In the urban areas, the greatest senior involvement by time period in fatal collisions was 30.8% in the 3 p.m. to 6 p.m. period. This same time frame recorded 29.3% of the total urban reported collisions of the senior drivers (Figure 11-12).

Figure 11-11

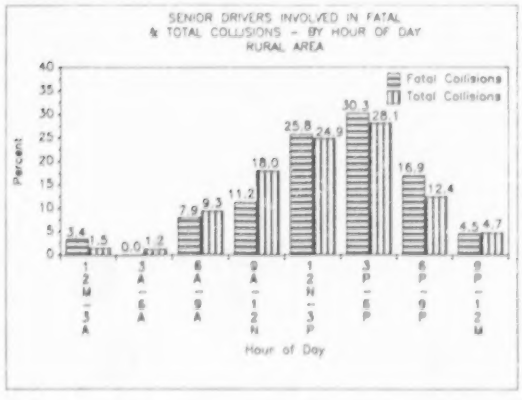


Figure 11-12